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UNIVERSITY OF ALBERTA

Environmentalism, Development, and the Last Frontier:
The Rise of Environmental Thought and the Canadian North, 1958-1974

BY

David Ivor Williams ©

A thesis submitted to the faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Arts.

DEPARTMENT OF HISTORY

Edmonton, Alberta
Spring 1995

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Environmentalism, Development, and the Last Frontier: The Rise of Environmental Thought and the Canadian North, 1958-1974 submitted by David Williams in partial fulfillment of the requirements for the degree of Master of Arts.

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December 2, 1994

Abstract

This thesis examines why public attitudes towards northern development changed so drastically between 1958 and 1974. In 1958, when the Conservatives were elected on a platform that included grandiose northern development plans, many Canadians saw the North as a vast reserve of minerals that should be exploited in order to make Canada rich. By 1974, when the Mackenzie Valley Pipeline Inquiry stopped a massive pipeline project, a growing number of Canadians viewed the North as a pristine wilderness and the home of Canada's native peoples. This significant shift in thought was largely due to the efforts of a group of Canadian scientists who, fearing the destruction of the northern environment by the oil industry, consciously worked to shape public policy regarding northern development. This thesis traces the development of environmental ideas within this group of scientists and examines their early efforts to put those ideas into action.

Acknowledgements

It is a pleasure to be able to acknowledge all of the people who have helped and sustained me through the writing of this thesis. To everyone in the History Department: students, faculty, and clerical staff - especially to Bob Cole, Paul Pirie, Dan Brown, and Rick Goulet - many thanks. Special thanks are owed to my supervisor, Dr. Doug Owram, who offered valuable advice, incisive comments, and great patience. My greatest debt is to my wife Molly, to whom I am grateful for her companionship and support during the writing of this thesis. Final thanks go to my parents - to whom this thesis is dedicated.

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INTRODUCTION

When, in May 1958, the Progressive Conservatives won the largest majority in Canadian electoral history, part of the reason was the enthusiastic reception voters gave to the party's 'Northern Vision'. The Vision was an ambitious nation building plan centred around the development of the natural resources of the Canadian North. Canadians reacted enthusiastically to leader John Diefenbaker's description of a vast new source of riches and national pride. When Diefenbaker said he wanted to give Canadians a "transcending sense of national purpose, such as Macdonald gave in his day," that purpose was to create "a new Canada...a Canada of the North!"[1] Drawing on an imagery that has dominated the Canadian imagination since before Confederation Alvin Hamilton, Diefenbaker's Minister of Northern Affairs and one of the chief architects of the northern vision, called the North "a new world to conquer - [and] it is much more than that. It is like a great vault...."[2] The government proposed to develop 'Roads to Resources' that would open up the North, and give a "new soul to Canada". In a speech to Parliament on July 7, 1958 Alvin Hamilton, promised that Roads to Resources would "[give] this country dominion...from the southern boundary to the Arctic Ocean...we feel that it is our destiny manifest by geography [to do so]. If we lose this vision the nation will perish."[3] As one observer has noted "Canadians did not understand their north or go to it, but it was theirs, and when Diefenbaker promised to develop it, he struck a responsive cord."[4]

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[1] Quoted in J. Howard Richards, "Northland or Promised Land," Queen's Quarterly 66, no. 4 (Winter 1960): 542.

[2] Quoted in Kenneth S. Coates, Canada's Colonies: A History of the Yukon and Northwest Territories. (Toronto: J. Lorimer & Company, 1985), 199.

[3] Quoted in Richards, "Northland or Promised Land,", 542.

[4] J. L. Granatstein, Canada, 1957-1967: The Years of Uncertainty and Innovation. (Toronto:

The government's strategy for opening up the North relied heavily on the power of modern technology with which they would be able to conquer the harsh conditions that had until then retarded development. The public imagination was captured by predictions of nuclear heated cities complete with warmed up lakes, gigantic nuclear submarine trains, high-speed passenger hovercraft, and an elaborate plan to dam the Bering Strait.[5] Hamilton spoke of an almost military style of development envisioning 'two fronts' converging on the North. "Between these two fronts the jaws of progress will begin to clamp onto our northern territories."[6]

Post-war Canadians were particularly fascinated by technology. In the years following the war they had witnessed the power of technology conquer many obstacles and open up new areas of exploration. The 1950s saw the invention of atomic power, the laser beam, and the colour television. New transportation such as trans-atlantic flight and the hovercraft were making the world seem smaller. There was less of the globe where people had not been; even Mount Everest was climbed in 1953. With the invention of the artificial heart in 1952 and the discovery of a vaccine for polio in 1956 it seemed that even the human body could be mastered. The launch of the Sputnik satellite by the Soviets in 1957 opened the space race. These discoveries and others like them created a sense that there was little that could not be achieved with the power of technology.

In the Canadian North the use of wartime technology such as long-range aircraft, tractor-crawlers, aerial photography, radar, and magnetometers made it possible to explore

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McClelland and Stewart, 1986), 36.

[5] See J. P. Maclean, "Progress Hits Trail in Our 'Sleeping North,'" Financial Post (23 February 1957), 25; J.S.G. Shotwell, "Who Says We Can't Build Arctic Cities?," Financial Post (30 August 1958); P. R. Calder, "World Capital 2059," The Beaver 289 (March 1959): 4-8.

[6] Alvin Hamilton, "Northern Resource Development - Today and Tomorrow," in The Last Frontier in North America: Proceedings of the First National Northern Development Conference (Edmonton: National Northern Development Conference, 1958), 47.

in days areas that once would have taken months or even years. In 1958 it seemed certain that the development of northern riches was just a matter of will power and careful planning.[7]

Less than twenty years after embracing Diefenbaker's Vision, the Canadian public sat before the now ubiquitous television and watched as B.C. Supreme Court Justice Thomas Berger conducted an Inquiry into proposals to build a natural gas pipeline up the Mackenzie Valley. The Inquiry, broadcast across the nation on the CBC, heard testimony not only from pipeline applicants and government officials but also from a group of environmentalists who opposed the pipeline on the grounds that it might damage the northern environment. Even more surprisingly, Berger took his Inquiry to many small northern communities and invited the Native people of the North to express their views on the pipeline and on northern development in general. Many natives were of the opinion that oil exploration was harming the animals and destroying the land and, as a result, was threatening their traditional way of life. Further complicating matters were the claims of the Inuit and the Dene that the proposed pipeline ran though lands which they considered to be theirs, and which had never been ceded to the government by treaty.

In 1977, four years after he was first appointed, Berger recommended that the building of the pipeline be delayed for ten years until it could be determined what effect it's construction would have on the environment and until native land claims were settled. The question Berger asked himself while preparing his report, and a question he believed all Canadians should ask themselves, was "Should we open up the North as we opened the West?"[8] Berger's answer was no. In his report Berger wrote,

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[7] Morris Zaslow, The Northward Expansion of Canada, 1914-1967. (Toronto: McClelland and Stewart, 1988), 236.

[8] Thomas Berger, Northern Frontier, Northern Homeland: The Report of the Mackenzie Valley

> I am convinced that non-renewable resources need not necessarily be the sole basis of the northern economy in the future. We should not place absolute faith in any model of development requiring large scale technology.[9]

In his condemnation of development Berger had the enthusiastic support of the media and a large segment of the public. His report became a national best seller which, as Robert Page has observed, "gave expression to the growing public concerns about resource exploitation and the complex interrelationships between environmental, social, cultural, and economic factors in the North."[10] It was the first time in Canadian history that a development project had been cancelled for environmental reasons.

Ken Coates has noted that the Berger Inquiry had a "stunning impact" on southern attitudes towards northern development and native rights.[11] Berger's recommendation that the pipeline not be built until it could be demonstrated that it would have no negative effects on the environment was a radical departure from the policy of previous governments and was considered revolutionary by the public. The idea of stopping a major development project simply because it might change the way of life of a relatively few Inuit or interfere with the breeding habits of some caribou would have been unthinkable to almost all Canadians only a few years previously. The dominant belief guiding Canada's national development was that progress was good for the country, and progress meant developing the resources of an area and settling it. From the first contact Canada had been settled by those seeking to develop its resources. Supporters of northern development, who argued

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Pipeline Inquiry. 2 Vols. (Ottawa: Department of Supply and Services, 1977): 1: 29.

[9] Ibid., 1: xxvi.

[10] Robert Page, "The Northern Pipeline Debate of the 1970s: The Observations of an Academic Participant," in Ken Coates and William Morrison (eds.) For Purposes of Dominion: Essays in Honour of Morris Zaslow. (North York: Captus Publishing, 1988), 221.

[11] Coates, Canada's Colonies, 221.

that oil and gas would modernize the north and bring the Inuit into the 20th century, viewed themselves as part of this tradition and could see little reason why anyone would object to their goals.

Obviously then in the two decades between 1958 and 1977 the way in which many Canadians thought about the North had changed considerably. What once was seen as a vast storehouse of natural resources ripe for exploitation for the benefit of southern Canada had come to be seen as the sacred home of the Inuit and Indians. What once was portrayed as being a harsh and forbidding land requiring all the power of modern technology to tame was now represented as an almost pristine wilderness with a fragile system of plants and animals which might easily be destroyed by the very presence of man and machine. It was a radical shift in thought that resulted not only in the cancelling of the pipeline but also in the changing of a number of government policies, the creation of whole new departments and procedures, the loss of tremendous profits to many companies, and a new way of thinking about natural resources.

The purpose of this thesis is to explore the dramatic shift that took place in attitudes towards northern development and towards the place of the North in Canadian society. It will be argued that this shift was largely the result of the concerted efforts of a relatively small group of activist scientists - aided by a changing social order. What occurred in this twenty year period was a fundamental shift in the thinking of a large and increasingly influential scientific elite. Whereas in 1958 the dominant belief was that progress could not be anything but good for the country, by the early 1970s the idea that development should have as little impact as possible was widely accepted.

Rather than signaling the beginning of northern/environmental consciousness in Canada the Berger Inquiry actually represents the culmination of twenty years of changing views regarding development issues in Canada. These concerns had been growing ever since Diefenbaker announced the Vision and, in a very real way, they grew out of the Vision. While it was the Berger Inquiry that brought these concerns into the living rooms of the nation, they were the work of a group that had been working for years to try and influence the government and the public to pay attention to the damage that was being done to the North. To this looseknit group, almost all of whom were Canadian scientists from the universities and federal and provincial governments, Berger's decision was a victory.

Before beginning a discussion of the shifting attitudes towards northern development it is necessary to examine some of the key movements in environmental thinking. The terms conservation, preservation, environmentalism, and ecology are used in various ways, sometimes interchangeably, by different sections of society to distinguish various activities. The ideas of conservation and preservation are especially susceptible to confusion. Even amongst those who research the history of environmental thought there are often differences over semantics; one writer's preservationist is another's conservationist. Joseph Petulla has observed that one of the most difficult tasks for the environmental historian is to untangle the various disparate ideas and movements which, for the sake of convenience, have been grouped together by the media as a movement.[12] For this reason it is important before beginning any discussion involving these terms to set down a clear set of definitions and to give some background about their origins. Despite the confusion they sometimes cause, the terms all have a definite history.[13]

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[12] Joseph M. Petuila, Environmental Protection in the United States: Industry, Agencies, Environmentalists. (San Francisco: San Francisco Study Center,1987), xiii.

[13] An excellent discussion of the differences between conservation and preservation as well as many of the other wilderness philosophies that have arisen in the last thirty years can be found in Chapter Nine "Contemporary Wilderness Philosophy from Resourcism to Deep Ecology" in Max Oelschlaeger, The Idea of Wilderness: From Prehistory to the Age of Ecology (New Haven and London: Yale University Press, 1991), 281-319.

The policy of conservation emerged at the end of the nineteenth century as a reaction to the growing problem of overuse and abuse of natural resources. It was believed by many in government and industry that the continued application of laissez-faire economics would lead to the economic ruin of the country. In response the idea of 'wise use' and 'scientific management' emerged to ensure that the optimum use of resources was made for the benefit of the largest number of people. This involved using new scientific techniques to maximize the yield of renewable resources and to make the most efficient use of non-renewable ones. Conservation was embraced by both American and Canadian governments.

The basic principles of conservation were outlined by government officials like Gifford Pinchot, the head of the U.S. Department of Agriculture. Pinchot stressed the three main ideas which form the basis of conservation; it is not opposed to development, it is for the prevention of waste, and natural resources are for the benefit of the many and not the few. In summing up conservation principles Pinchot wrote, "Conservation means the

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The history of conservation, preservation, and ecology is well developed in the United States and Great Britain. The major works are, Samuel P. Hays, Beauty, Health, and Permanence: Environmental Politics in the United States, 1955-1985. (New York: Cambridge University Press, 1987); Thomas Dunlap, Saving America's Wildlife: Ecology and the American Mind, 1850-1990 (Princeton: Princeton University Press, 1989); Donald Worster, Nature's Economy: The Roots of Ecology. (Garden City, N.Y: Anchor Books, 1979); Samuel P. Hays Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920. (Cambridge, Mass.: Harvard University Press, 1968).

In Canada, however, the field is only beginning to be explored see Gerald Killan, Protected Places: A History of Ontario's Provincial Parks System. (Toronto: Dundurn Press, 1993); Gerald Killan and George Warecki, "The Algonquin Wildlands League and the Emergence of Environmental Politics in Ontario, 1965-1974," Environmental History Review 16, no. 4 (December 1992): 2-27.; R. Peter Gillis and Thomas R. Roach, Lost Initiatives: Canada's Forest Industries, Forest Policy and Forest Conservation. (New York: Greenwood Press, 1986); Janet Foster, Working for Wildlife: The Beginnings of Preservation in Canada. (Toronto, University of Toronto Press, 1978); R.C. Brown, "The Doctrine of Usefulness: Natural Resources and National Park Policy in Canada, 1897-1914," in J. G. Nelson, (ed.) Canadian Parks in Perspective (Montreal, 1979), 46-62.; H. V. Nelles, The Politics of Development: Forests, Mines and Hydro-Electric Power in Ontario, 1849-1941. (Toronto: Macmillan, 1974).; George Altmeyer, "Three Ideas of Nature in Canada, 1893-1914," Journal of Canadian Studies 11, no. 3. (August 1976), 21-36.

greatest good for the greatest number for the longest time."[14] In 1907 Theodore Roosevelt organized the Governor's Conference on Conservation at which new policies and legislation aimed at conservation of natural resources were discussed. The Governor's Conference is generally agreed to mark the emergence of conservation in public policy decision making at such high levels.[15]

Conservation policies first came to Canada on a large scale in 1909 when the Laurier government established the Commission of Conservation with Clifford Sifton as its chair. The Commission was composed of both provincial resource ministers and a number of university professors. Although it produced a large number of scientific studies of natural resources, its advice was often unheeded when development actually occurred. Conservation principles were always easy to overlook, particularly on the northern frontier. Morris Zaslow has observed that the advice of conservationists was often "overridden by the imperatives of two wars, the Depression of the thirties and, unfortunately, by the eager drives for profits during the boom times of the twenties and after 1945."[16]

In the post-war years the need to manage resources grew more pronounced as new technologies made the rapid utilization of natural resources easier. In forestry, for example, as large-scale mechanized logging became more common the government saw the need to coordinate research and standardize practices.[17] Compounding the problem was the increasing consumer demand for new products that followed World War II. The building of the suburbs, and the rebuilding of western Europe, created an extraordinarily high demand for lumber, minerals, hydro power, oil, and gasoline.[18]

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[14] Petulla, Environmental Protection in the United States, 36; See Gifford Pinchot, The Fight for Conservation (New York: Doubleday, Page, 1910).

[15] Oelschlaeger, The Idea of Wilderness, 283.

[16] Zaslow, Northward Expansion of Canada, 268.

[17] Ibid., 254.; On the evolution of logging see Ian Radforth, Bushworkers and Bosses: Logging in Northern Ontario, 1900-1980. (Toronto: University of Toronto Press, 1987).

A major component of scientific management theory is the 'multiple use' concept of regional development. Developed as an attempt to avoid the 'boom and bust' cycle which so often plagued Canadian resource development plans, multiple use development dictates that development plans should revolve around the utilization of several resources in order for a stable mixed economy to begin. In 1955 Anthony Dalton Scott, an economist at the University of British Columbia, published Natural Resources: The Economics of Conservation. In this pioneering work Scott emphasised the need for scientific management techniques to develop several resources and avoid the single resource trap that had doomed so much development. The exploitation of a single resource was not considered to be a viable basis on which to develop a region.[19]

Preservation differs from conservation in two crucial respects. First, it requires that an area of land or a species be protected from development and preserved for posterity; opinions to what is acceptable use of land range from recreational use to no use. The second important difference is that the idea of preservation has almost no basis in economics. While conservation of resources is most often urged by those with a financial or political stake in the continued existence of those resources, demands for the preservation of land most often originate from those with no financial involvement in development. For these reasons it is often argued that preservation and conservation have very little in common and that there is in fact a 'discontinuity' or even a 'conflict' between them.[20]

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[18] Oelschlaeger, Idea of Wilderness, 283; Zaslow, Northward Expansion of Canada, 234.

[19] A. D. Scott, Natural Resources: The Economics of Conservation. (Toronto: University of Toronto Press, 1955).

[20] Hays, Beauty, Health, and Permanence, xi.

Preservation has its roots in two major streams of thought, biocentrism and ecology, which are sometimes overlapping and sometimes divergent. The biocentric, or transcendentalist, viewpoint urges the preservation of natural areas for their own sake. It is based on the notion that there are aesthetic and spiritual benefits to be gained from preserving the wilderness. The ecological viewpoint, on the other hand, dictates the preservation of wilderness areas based on a scientific understanding of the interrelationships and interdependence of natural communities. It argues that damage to one species of plant or animal has repercussions for all species.[21]

The ecological viewpoint has its origins in the writings of Robert Malthus, Charles Darwin, and George Perkins Marsh. While the ideas of Malthus and Darwin need no elaboration here, Marsh's are perhaps less well known. Marsh argued that if people continued to abuse their relationship with nature then environmental equilibrium would be destroyed. The resulting catastrophes would be Nature's way of punishing humanity. He urged extreme caution when carrying out "all operations which, on a large scale, interfere with the spontaneous arrangements of the organic or the inorganic world."[22] The biocentric viewpoint finds its roots in the transcendentalist writings of Ralph Waldo Emerson and Henry Thoreau. These writers advocated the following of transcendental 'higher laws' which should govern the way an individual lives his life. Although the two viewpoints are very different, the one is rational and scientific while the other is emotional and intellectual, they are often held simultaneously.

The writer who did the most to promote preservation ideals in the twentieth century was American ecologist Aldo Leopold. In A Sand County Almanac Leopold first introduced his concept of the 'ecological conscience' which combined the ideas of ecology and biocentrism. Leopold's thinking revolves around the idea that mankind must discover and follow the laws of ecology in order to preserve the land which makes our own life possible. If man fails to learn these laws then he is doomed to perish because people depend on stable ecosystems in order to survive.[23]

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[21] Petulla, Environmental Protection in the United States, 26.

[22] Oelschlaeger, Idea of Wilderness, 283.; George Perkins Marsh, The Earth as Modified by Human Action: A New Edition of Man and Nature. (New York: Scribner, 1874), iii.

One of the greatest Canadian contributions to ecology came from Pierre Dansereau. While Dean of Science at the Université de Montréal Dansereau published his enormously influential Biogeography: An Ecological Perspective. Biogeography aims to learn about how an organism relates to its environment. It uses the findings for both biological and non-biological sciences. Dansereau proposed the "Ball of Arrows" model of the globe which illustrates the intricate interrelationships which sustain the world.[24]

Environmentalism is the active lobbying of government and industry to protect the environment from damage by the activities of man. Where preservation is generally aimed at protecting a specific area of land from damage, environmentalism is often concerned with protecting the air, the sea, the lakes, whole continents, or the entire earth. Preservation is one form of environmentalism. Environmentalism arose following the Second World War as a reaction to the rapid increase in "the magnitude and form of ...threats from modern technology."[25] These threats include pollution, atomic weapons, and increased population density.

While Samuel Hays has identified a series of stages that led to environmentalism in the United States - a boom in outdoor recreation, protection of natural environments, concerns about air and water pollution, and then toxic pollutants - Gerald Killan and George Warecki have argued quite convincingly that, in Canada, these phases were "compressed into one, intermittent stage." They point to the role of the Federation of Ontario Naturalists in pressuring the Ontario government to establish a series of publicly owned nature reserves as the beginnings of the environmental movement in Canada. These reserves were to act as scientific benchmarks for the study of the effect pollution and industrialization was having on the land. The FON's lobbying efforts led to the passage by the Ontario government of the Wilderness Areas Act in 1959.[26]

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[23] Aldo Leopold, A Sand County Almanac, and Sketches Here and There (New York: Oxford University Press, 1949). On Leopold see Petulla, Environmental Protection in the United States, 61.

[24] Pierre Dansereau, Biogeography: An Ecological Perspective. (New York: Ronald Press, 1957).

[25] Samuel P. Hays, "From Conservation to Environment: Environmental Politics in the United States Since World War II." Environmental Review 6 (September 1982): 24.

The involvement of scientists in environmentalism owes a great deal to the massive technological achievements that occurred after the Second World War. The most important of these was, of course, the atomic bomb which ended the war. After the bomb, scientists began to question their role in society. If they could affect nature to such an enormous degree did they not have the responsibility to look into the dangers their research posed? Concerns about radioactive fallout from continued atomic testing, the awful infant deformities caused by thalidomide, and the mass spraying of the continent with untested pesticides heightened the unease.

Barry Commoner, a professor of plant physiology at Washington University in St. Louis, was one of the first scientists to take direct action. He founded the St. Louis Committee for Nuclear Information in 1958 to distribute scientific information about government use of atomic explosives. Commoner advocated that scientists must be free to discuss dangers posed by science and technology.[27] Shortly after Commoner's Committee was formed came the most dramatic example of a scientist becoming involved in environmentalism. Rachel Carson, a young biologist at the Fisheries and Wildlife Service, became interested in the ill effects the pesticide DDT was having on birds and mammals. Attempts to relate her fears to the government were in vain and in 1962 she published her monumentally influential Silent Spring. Silent Spring is considered by many to be the impetus of the modern environmental movement.[28] In publishing her fears in a book intended for the general reader Rachel Carson intentionally moved the issue of pesticide use into the "noisy classroom of public debate".[29]

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[26] Killan and Warecki, "The Algonquin Wildlands League", 2.

[27] Peter A. Coates. The Trans Alaska Pipeline Controversy: Technology, Conservation, and the Frontier. (Bethlehem: Lehigh University Press, 1991) , 125 and 130.

The attempts of a group of Canadian scientists to bring the issue of protecting the northern environment from damage by industry into the "noisy classroom of public debate" is the central concern of this thesis. It traces the development of their ideas about the northern environment and examines their efforts to express these ideas to the public and to the government.

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[28] Petulla, Environmental Protection in the United States, 66.

[29] Linda J. Lear, "Rachel Carson's Silent Spring," Environmental History Review 17, no. 2 (Summer 1993): 30.

CHAPTER ONE

"Let us create a healthy, loyal opposition"

The Emergence of Environmental Ideas, 1958-1962

When the Conservative government began to implement their programme of northern development almost nothing was known about the physical and natural environment of the North. Very few major studies of the Canadian North had been carried out since 1885 when Charles Tuttle, a Winnipeg newspaper man and fervent western expansionist, published Our North Land an account of his exploration of the area around Hudson Bay. Tuttle, one of the most energetic promoters of a railway to Hudson Bay, had enthusiastically praised the North and emphasised the abundance of natural resources that were waiting there to be exploited.[1]

What little scientific work had been carried out in the North had been done under the aegis of the Geological Survey of Canada. Founded in 1842 under geologist William Logan, the GSC had created in Canada a great faith in the richness of the North. Famous surveyors such as George Dawson who mapped the Yukon, J. B. Tyrrell who mapped the Barrens, and Gilbert Labine who discovered uranium at Port Radium achieved incredible feats in mapping the North and taking inventory of its resources as well as reporting on soil, climate, forest, wildlife, and the inhabitants of the land. Amazing as they were, however, the GSC surveys gave only the barest sketch of the country's metallic and mineral resources.[2]

Between 1913 and 1918 the GSC mounted the Canadian Arctic Expedition.

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[1] Doug Owram, The Promise of Eden: The Canadian Expansionist Movement and the Idea of the West, 1856-1900. (Toronto: University of Toronto Press, 1980), 182-191.

[2] Morris Zaslow, Reading the Rocks: The Story of the Geological Survey of Canada. (Toronto: Macmillan and Co., 1975).

Consisting of a full range of scientists, the purpose of the expedition was to map and explore the far North and report on its economic potential. It was the first time surveyors had been north of the Great Bear Lake. Although somewhat disastrous, and plagued by internal dissension, the Expedition was successful in creating increased interest in the Arctic largely because of Vilhjalmur Steffanson's discovery of a number of new islands.

Steffanson is credited with creating more interest in the Arctic than any other individual. In his famous books The Friendly Arctic and The Northward Course of Empire, Steffanson emphasised the need to develop the resources of the Arctic. The feelings aroused in Canadians by Steffanson are summed up by Morris Zaslow,

> The Arctic Ocean would come into its own as a Polar Mediterranean, bordered by major countries....Its skies would be traversed by aircraft, its waters by cargo-carrying submarines. Arctic Lands would gain undreamed-of importance, and nations would be envied for their good fortune in possessing them.[3]

Yet, despite the excitement, the only real economic contribution the North made to Canadian life prior to World War II was in the form of gold. With the outbreak of war, however, the North began to play a major new role in the economic life of the country. It supplied many wartime needs such as pulp and paper, wood, minerals, and hydro power. More importantly the war transformed the North in a way which would otherwise have taken decades. The building of the Canol pipeline, the Alaska Highway, and the various radar lines opened the North up quickly, providing vast amounts of detailed technical knowledge and experience in an extraordinarily short amount of time. Wartime technologies such as radar, long distance aircraft, helicopters, and aerial photography could all be used to exploit the natural resources of the area. In the years following the war a great deal of optimism arose around the future of resource development in the north. The Financial Post, in particular, predicted the migration of thousands of workers to a new industrial north and allusions to the "last frontier" were rampant.[4]

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[3] Morris Zaslow, The Northward Expansion of Canada, 1914-1967, (Toronto: McClelland and Stewart, 1988), 14.

The North Pacific Planning Project gave Canadians their first real appraisal of the Mackenzie District. Supervised by Charles Camsell, the chief exploration geologist of the GSC, the NPPP undertook basic surveys of agriculture, forests, fisheries, water power, wildlife, and transportation. Camsell concluded that minerals and oil would be the key to the development of the Mackenzie region.[5] Again, however, the report was very superficial and written in the most general terms possible; the entire report was under one hundred and fifty pages.

In late November 1957 the Royal Commission on Canada's Economic Prospects (Gordon Commission) submitted its final report. The Commission recognized that the United States viewed Canada as a 'safe' source of lead, nickel, copper, aluminum, zinc, uranium, and petroleum; resources that were crucial in the post war world. To Gordon the prospects of economic development in the Yukon and the NWT depended on the expansion of mining and the development of oil and gas. He also believed that the natural resources of the North were not sufficient to support the Inuit population "at anything like Canadian standards of living."[6]

In 1958 the first National Northern Development Conference was hosted by the Edmonton Chamber of Commerce and the Alberta and Northwest Chamber of Mines and Resources. It was the strict domain of government and industry and was attended by over three hundred representatives from the major oil and mining companies and various government departments. Alvin Hamilton, in addressing the conference, developed on the ideas of the Gordon Commission stating that the future of the north lay in minerals and oil and gas. To Hamilton the main problem of northern development - "in many ways the only important one" - was transportation. Luckily transportation problems would be solved by modern technology. By way of example Hamilton discussed how the atomic submarine Nautilus had only a few weeks previously "turned a Jules Verne fantasy...into an accomplished reality." He confidently predicted the emergence of submarine service between Canada and Europe.[7] The business community reacted enthusiastically to both the conference and the Gordon Commission report.[8]

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[4] Zaslow, Northward Expansion of Canada, 306-331.

[5] North Pacific Planning Project, Canada's New Northwest: A Study of the Present and Future Development of the Mackenzie District of the North West Territory, Yukon Territory, and the Northern Parts of Alberta and British Columbia. (Ottawa: Queen's Printer, 1948).

[6] Canada. Royal Commission on Canada's Economic Prospects. Final Report. (Ottawa: Queen's Printer, 1957), 35, 416- 417.

Academics had become active in the North as a result of the increased government presence, Canadian and American, in the North during and after the Second World War. Men like Trevor Lloyd, Brooke Claxton, and Arnold Heeney called for greater government involvement in northern affairs.[9] In March 1943 Raleigh Parkin proposed that the Canadian Institute of International Affairs sponsor Trevor Lloyd, a Canadian geographer teaching at Dartmouth College, to conduct an extensive study of the Canadian Arctic. Three years later Lloyd released his "detailed, comprehensive, controversial study of the North which heavily criticized government policy in the North."[10] The institute sponsored talks on the North by J. Tuzo Wilson, Omond Solandt, and Trevor Lloyd.[11] These studies greatly heightened academic interest in the North and also drew attention to the neglect of the Inuit and Indians.

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[7] Alvin Hamilton, "Northern Resource Development - Today and Tomorrow," in The Last Frontier in North America, 43.

[8] "Dewline Pioneers Tamed the Arctic for Builders," Financial Post (February 22, 1958); "Look to the Northland for Tomorrow's Profits," Financial Post. (September 13, 1958); J. G. Shotwell. "Who Says We Can't Build Arctic Cities," Financial Post. (August 30, 1958).

[9] Shelagh Grant, "Northern Nationalists: Visions of 'A New North', 1940-1950," in Coates and Morrison, For Purposes of Dominion, 55-57.

[10] Trevor Lloyd, Frontier of Destiny: The Canadian Arctic. (Toronto: Canadian Institute of International Affairs, 1946).

In the Fall of 1944 the Arctic Institute of North America was organized by a group of Canadians and Americans from universities, government, and business who were involved with the North. The idea of an Arctic Institute originated with a small group of Canadians who were concerned about the American "army of occupation" in the North during the 1940s and about the Canadian government's seeming lack of interest in its own Northern regions. Their concern stemmed from beliefs that Canada could play a larger role in the world because of its increased strategic importance between the U.S. and the U.S.S.R. The group wanted to form an organization to "stimulate popular interest in the North and help to focus the attention of government and other agencies on administrative, social, and economic problems as well as those in the field of the natural sciences."[12]

A number of American scientists became interested in joining the Arctic Institute and suggested that a joint group be formed. Although the Canadian group eventually agreed to this plan they did not do so without considerable debate. The Canadian and the American membership had different reasons for joining the Institute; the Canadian membership represented specific government departments such as Mines and Resources, National Research Council, National Defence Headquarters, and the National Museum of Canada whereas the American membership was on an individual basis and was primarily interested in scientific issues.[13]

The Canadian membership of the Arctic Institute was a diverse and powerful group.

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[11] Grant, "Northern Nationalists,", 57.

[12] Raleigh Parkin, "The Origin of the Institute," Arctic 19, no. 1 (March 1966): 5-18.

[13] Grant, "Northern Nationalists,", 59.

It included a number of very senior government officials including Gordon Robertson; Hugh Keenlyside, Assistant Under Secretary of State for External Affairs; Arnold Heeny, Clerk of the Privy Council; and Charles Camsell, Deputy Minister of Mines and Resources.[14] Business interests were represented by Phillip Chester, the general manager of the Hudson Bay Company; Robert Beattie, Director of the Bank of Canada; and Raleigh Parkin, Treasurer of Sun Life Assurance Company. Representatives of the scientific/academic community included Trevor Lloyd; Vilhjalmur Steffanson; Max Dunbar, Chair of the Marine Sciences Division at McGill; Diamond Jenness, Chief Anthropologist of the National Museum; J. Tuzo Wilson, Director Operational Research at National Defence; Robert Newton, President of the University of Alberta; John O'Neill, Dean of Engineering at McGill; A. E. Porsild, Chief Botanist of the National Museum; and C. J. Mackenzie, President of the National Research Council.[15] The Institute was very much a part of the elite groups of experts that had appeared during the war.

There was amongst the membership of the Institute an overwhelming consensus of opinion as to the desirability, and inevitability, of northern development. Indeed the primary focus of the Canadian members of AINA was very much to develop the North quickly, and for Canada. Max Dunbar, in a speech on CBC radio said,

> We should remember also that if we don't go all out in the use of our northland, somebody else will; other people's money will be invested there and we will be left looking silly. The country is empty...a thing which no nation can afford these days.[16]

There was very little indication of the potential for conflict that existed within the group. As

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[14] For more on the beliefs of the early members of the Arctic Institute see Grant, "Northern Nationalists," 47-70 .

[15] For a complete list of the founding members of the Arctic Institute see Shelagh Grant, Sovereignty or Security?: Government Policy in the Canadian North, 1936-1950. (Vancouver: University of British Columbia Press, 1988): 252-253.

[16] Max Dunbar, Speech on CBC Radio 9 June 1946: quoted in Grant, "Northern Nationalists,", 60.

Raleigh Parkin put it in his account of the origins of the Institute, "All, without exception, were determined to do something...to overcome the neglect of the North."[17]

In 1947 the Arctic Institute began a vigorous publishing programme which included the quarterly journal Arctic and the yearly Arctic Bibliography. Both Arctic which, under the editorship of Trevor Lloyd published articles from a variety of disciplines as well as general notes about the North, and the Bibliography, which provided abstracts of scientific articles dealing with the North, quickly became indispensable to those carrying out research on the Arctic. The Institute also published a series of technical papers and special reports on numerous topics. Between 1958 and 1966 these publications would include important works on the caribou, birds, and other animals of the Arctic.

One Arctic Institute publication that was particularly influential was a 1956 review of northern research and problems needing further study. The review consisted of brief articles by Robert Legget, an engineer with the National Research Council, on the nature of permafrost; Donald Rawson, Head of the Biology Department at the University of Saskatchewan, calling for greater research on the nature of fresh water species in the Arctic; Max Dunbar on marine ecology; and Douglas Clarke on wildlife research.[18] The common theme in all of the papers was an emphasis on the almost total lack of knowledge about northern flora and fauna. Dunbar emphasised the delicate balance of life and noted that the arrival of European whalers in the Arctic had seriously disturbed the sea mammal populations; a situation which had recently been worsened by the introduction of southern technologies, the rifle and the snowmobile, to the Inuit.[19]

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[17] Parkin,"The Origin of the Institute,", 15.

[18] D. Rowley (ed.), Arctic Research: The Current Status of Research and Some Immediate Problems in the North American Arctic and Sub-Arctic (Montreal: AINA, 1956) See especially R.F. Legget, "Permafrost Research,", 41-46; D.S.Rawson, "Limnology in the North American Arctic,", 206-213.; M. J. Dunbar, "Arctic and Sub-Arctic Marine Ecology: Immediate Problems,"; C.H.D. Clarke, "Wildlife Research in the North American Arctic,", 255-263.

Over the years the role of the natural sciences in the Institute was strengthened. By 1959 the Institute included amongst its members Frank Banfield, Douglas Clarke, Max Dunbar, Trevor Lloyd, Patrick McTaggart-Cowan, Ian McTaggart-Cowan, A.E. Porsild, and Donald Rawson. Scientists were beginning to play a much bigger role in the running of the Institute; the 1959 Board of Governors included Ian McTaggart-Cowan, Max Dunbar, Ken Hare, Robert Legget, and Trevor Lloyd.

The significance of the Arctic Institute of North America lies in its creation of a distinct, independent northern research community. While a few scholars had been engaged in northern research they had never before had a forum specifically devoted to northern research as was Arctic. Ideas about the North could now circulate more freely and cross disciplinary lines. The annual review of research encouraged new avenues of exploration especially into the natural sciences. While the scientific integrity of the Geological Survey or of the Canadian Wildlife Service can not be questioned they were branches of the government and, as such, they were under government control and their research could be manipulated or ignored as the the government saw fit. The Arctic Institute, however, could act independently.

The amount of work done by Institute members was enormous especially in the natural sciences and it formed the basis for much of the ecological work that was to occur throughout the sixties. The more the scientists began to understand about the northern environment, however, the more questions presented themselves.

When Diefenbaker announced the Northern Vision the Fellows of the Arctic Institute were delighted. It seemed that finally their efforts to get the Canadian government to pay attention to its own North had been successful. They responded by writing about

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[20] Dunbar, "Arctic and Sub-Arctic Marine Ecology: Immediate Problems,", 234.

and discussing the North in great detail and at great length.The Vision is undoubtedly responsible for initiating a whole new phase in scientific consideration of the North.

We can get a good indication of general attitudes of Canadian intellectuals towards the North and northern development from scholarly papers presented at learned conferences and from journals such as the Queen's Quarterly and Arctic that appeared in the years immediately following 1958. Three collections of papers in particular merit close attention as they came to form the basis for much of the discussion on northern development issues that was to occur over the next decade; two of these collections were the published papers of Royal Society of Canada conferences, the third was a special issue of the Queen's Quarterly devoted to northern development. The Royal Society of Canada held two major conferences dealing with northern development during the Roads to Resources years. The first, in 1958, examined the natural resources of the North, the possibility of developing them, and the problems that might be encountered in doing so. The second conference, in 1961, studied the possibility of colonizing the North and establishing large scale permanent settlements there as a way of relieving an expected, and feared, population boom. In 1960 the editors of the Queen's Quarterly devoted an entire issue to the subject of northern development. Taken together the Royal Society papers and the Queen's Quarterly articles contain the opinions of the most prominent Canadian intellectuals interested in the North as the 1960s began. Delivering papers at the Royal Society meetings were such distinguished northern experts as Max Dunbar, Trevor Lloyd, Donald Rawson, Robert Legget, D.B.Turner, William Wonders, and Morris Zaslow. Contributing to the Queen's Quarterly issue were R.A.J. Phillips, Trevor Lloyd, Gordon Robertson, J. Tuzo Wilson, and J. Howard Richards. It was this small group of men who formed the core of expertise on northern issues in the early 1960s.

These early papers are important in that they provide us with an idea of attitudes towards northern development and beliefs about resource use amongst the scientific community at a time when very few Canadian scientists were studying the North and, as a result, there was little information with which to plan northern development. Secondly, they provide us with a benchmark against which to gauge the changes in thinking that would take place over the next fifteen years.

In his Preface to the published papers of the 1958 meeting the historian Frank Underhill summed up the essence of the meetings when he noted how the

> ...spectacular big project...has stirred romantic ideas in the minds of most Canadians and encouraged grandiose dreams about national destiny. More important, it has roused a new sense of responsibility for the future of this hitherto largely unknown and neglected fifth of the country.[20]

The responsibility Underhill was referring to was not one of caring for the land or the people on it but rather a responsibility to develop it, to industrialize and modernize it. Noting, perhaps somewhat guiltily, that the participants in the conference had paid very little attention to the role the Inuit might play in northern development, or the effect that development would have on the land, Underhill explained that the Fellows of the Royal Society were "like most of their fellow citizens...primarily economic animals."[21] Similar attitudes can be found in the editorial to the 1960 Queen's Quarterly issue. The editors drew broad parallels between the potential of the North in 1958 and the potential of the western prairies in 1895. In recounting how many people had underestimated the potential of the prairies the editors pointed out how the journal had run a series of promising articles on it in 1895.[22]

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[20] Frank Underhill, "Introduction," in The Canadian Northwest: Its Potentialities: Symposium Presented to the Royal Society of Canada in 1958. ed. F. H. Underhill (Toronto: University of Toronto Press, 1959), iv - v.

[21] Ibid. , vi.

There are several themes which emerged in the Royal Society and Queen's Quarterly papers which merit scrutiny. Concerns about the role of scientists, the need for planning and basic research, the uses and effects of technology, the role of wilderness and wildlife, the best foundation upon which to base development, and the role of the northern natives were issues that all discussions of the North had to take into account during this time. While there was still virtual unanimity regarding the desirability of northern development, there can be detected in each of these concerns indications of problems that would present themselves as industrial pressure on the North increased.

The idea that scientists and other experts should provide advice and knowledge to government was one that emerged in the inter and post war years. The formation of the Arctic Institute was an example of this. Canadian scientists were beginning to realize that they had a great deal to contribute to the opening of the North and were beginning to claim their place.William Wonders, a geographer from the University of Alberta, stressed the need for co-operation between qualified government officials and "independent persons experienced in the North".[23] Trevor Lloyd advocated "long term, systematic studies of the North both land and sea ... co-operation between departments and generous funding".[24]

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[22] "The North: Prospects and Policies," in Queen's Quarterly 66, no. 4 (Winter 1960): 1.

[23] William Wonders, "Assessment by a Geographer," in Underhill, The Canadian Northwest, 34.

[24] Trevor Lloyd, "The Future Colonization of Northern Canada," in Canadian Population and Northern Colonization: Symposium Presented to the Royal Society of Canada in 1961. ed. V.W. Bladen (Toronto: University of Toronto Press, 1962): 157.

There were very few who would have disagreed with botanist René Pomlereau when he emphasized "it is our duty ... to contribute to [the north's] development and to enhance its value. We should carry our share in the planning of the future occupancy of this part of the country."[25]

Planning was the key word in Pomlereau's statement. To the scientists planning meant the gathering of basic knowledge about the physical and natural environment that would, in turn, allow for the rational exploitation of the resources. A constant in all of the articles was the emphasis on how little was actually known about the North and its resources. Even at the most basic level of inventory science, the cataloguing of different species of plants and animals, almost nothing was known. In order to complete the inventory, to gain detailed knowledge, and to carry out the planning for development of the resources, there had to be a great deal of primary research into the nature of the North. This research would not come cheap. William Wonders noted that in 1957 the total budget for the Department of Northern Affairs and Natural Resources had been thirty seven million dollars, or less than one per cent of the total federal budget. Wonders emphasized, as did many of the others, that much greater funding would be needed.[26]

The very fact that the Royal Society was debating the merits of resource development is itself worthy of note. The scientists were not only providing information on what resources were there to be developed, they were giving their opinions on the nature of development itself, what course it should take and how it should proceed. The approach most often advocated for the the development of the North was that of 'multiple use' of resources as advocated by University of British Columbia economist A.D. Scott. Canadian scientists were unanimous in endorsing the validity of this approach and went to great lengths to consider all of the possible resources the North had to offer. In this belief they were operating firmly in the vein of the 'wise use' conservationists who advocated the principle of 'scientific management' that had evolved earlier in the century.

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[25] René Pomlereau, "Introduction," in Bladen, Canadian Population and Northern Colonization , vi.

[26] Wonders, "Assessment by a Geographer,", 34.

The doctrines of multiple use resource development and wise use conservation were responsible for all the discussion amongst scientists about developing the renewable resources of the Arctic as opposed to industry simply going North and developing the minerals and oil. Unfortunately it was apparent, almost from the outset, that there was virtually nothing else worth developing from an economic viewpoint. About no resource was this more true than fish and wildlife. At the 1958 meeting D.B.Turner told the delegates that it was time to lay to rest "the widespread misconception" that the wildlife resources of the North are in rich supply".[27] At the 1961 meeting things were no better. Max Dunbar firmly presented his conviction that the wildlife of the North should no longer be considered a renewable resource because "present research...is meeting with disheartening difficulties" and Dunbar did not envision much hope of increasing stocks.[28] Nor was there much hope of establishing any kind of mixed economy given the state of agricultural knowledge at that time. While some scientists entertained the possibility of developing agricultural products that could thrive in the short growing season of the North, most agreed with William Wonders who, after considering the possibilities of developing agriculture, fishing, forestry, water, and minerals dismissed the first four as being "possible but marginal ventures".[29] There did remain a feeling amongst some that increased research would eventually succeed in making agricultural or wildlife resources viable. Allusions to those who believed that the West could never support settlement were quite common. "There was a time when it was agreed by most experts that crops could not be grown in the short productive season of the western plains," argued Robertson.[30] Nevertheless the bottom line, as Robertson declared, was "realistically ...the future of the North lies underground."[31] The problem was that only developing resources would not lead to a stable economy for the north nor would it lead to its settlement. "To believe that colonization and mineral resources development go hand in hand is to deny the facts of mineral occurrence and depletion".[32]

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[27] D. B. Turner, "The Resources Future," in Underhill, The Canadian Northwest, 86.

[28] Max Dunbar, "The Living Resources of the Arctic," in Bladen, Canadian Population and Northern Colonization, 127.

If there was some concern about the problems facing northern development there was little doubt that the task would be rendered infinitely easier by the use of modern technology. As mentioned above Canadians were virtually in awe of the various technological wonders which emerged almost daily in the late 1950s and early 1960s. Scientists were no exception to the fascination with technology and numerous articles from this period speculated on the marvels that might be achieved through the application of this technology. Only a relatively few scientists were beginning to question the negative aspects of technology, as will be demonstrated shortly.

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[29] Wonders, "Assessment by a Geographer,", 29.

[30] R. Gordon Robertson, "The Material Prospects of the North," Queen's Quarterly. 66, no. 4 (Winter 1960): 512.

[31] Ibid., 513.

[32] Henderson, J. F. and W. K. Buck, "The Role of Mineral Resources in the Development and Colonization of Northern Canada," in Bladen (ed.) Canadian Population and Northern Colonization, 116.

At the 1958 Royal Society meeting Robert Legget proudly recounted how the technological achievements of the previous decade - the DEW line, trans-polar flights, new roads to remote locations, the CANOL pipeline - had changed the face of the North forever.[33] Trevor Lloyd commented that the invention of jets and atomic submarines was going to make the North a part of the modern world.[34] Lloyd went further than this, echoing William Murdoch and Vilhjalmur Steffanson, when he claimed that the Arctic Ocean would soon become the new Mediterranean, similar to that "older Mediterranean that once separated Rome and Carthage."[35] The navigation of this new Mediterrean, claimed Lloyd, would be made easier by the powerful new Canadian icebreaker John A. Macdonald. Lloyd marveled at the "astonishing accomplishment" of the completion of aerial photography of the whole North, and the detailed maps being published in 1960.[36] Legget's description of the role of the engineer as "directing the great sources of power in Nature for the use and convenience of man," sums up the attitudes of all those who were determined to develop the North.[37]

While the role Canada's native people would play in northern development was virtually ignored in most of the papers, there were a few allusions to native people that are worth examining. The general attitude was one of benevolent concern and goodwill towards the natives. It was generally agreed that the only future for the native populations was to adapt to the new technological North and become industrial workers; if they did not, they would suffer. As Trevor Lloyd put it,

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[33] R. F. Legget, "An Engineering Assessment," in Underhill (ed.), The Canadian Northwest, 9.

[34] Arthur E. Molloy, "Arctic Science and the Nuclear Submarine," Arctic 15, no. 2 (June 1962): 89.

[35] Trevor Lloyd, "Canada's Northland," Queen's Quarterly 66, no. 4 (Winter 1960): 529. This theme also shows up in a 1958 government publication This is the Arctic. "for thousands of years civilization has been converging from both sides of the world toward a common centre. That centre is the Arctic!"

[36] Ibid., 530.

[37] Legget, "An Engineering Assessment,", 9.

> The Mackenzie Valley seems certain to become a region where the native Indians will play only a minor and possibly servile part, unless there is a drastic change in present policies. Mineral development may lead to a significant white influx or the Eskimos may develop into an industrialized group willing and qualified to provide much of the manpower needed.[38]

G.C. Monture, an official at Northern Affairs, agreed that natives were the best people to man northern developments and saw two major benefits to their employment. It would employ the large native populations of the North and it would prevent the problem, and expense, of dealing with transplanted southerners who were prone to getting 'bushed' and needing to be flown out of the North. Because the North was the native's natural home, argued Monture, it should be they who benefit from development.[39]

R.A.J. Phillips was so enthusiastic about the possibility of natives working in the newly industrialized North that he claimed, "The problem in the long run is not jobs for the Eskimos but Eskimos for the jobs."[40] Of those Inuit who wished to stay on the land, Phillips predicted "There will be less pressure on available game resources, and modern technology can bring more efficient means of harvesting those resources."[41]

The idea that natives would benefit from the development of the North soon became enshrined in government policy. There was almost no thought given to whether the Indians and Inuit desired to join industrial society nor was there any suggestion that the traditional economy of the natives might be enough for them or concern about the impact industrialization might have on their culture. This all derived from the belief that the industrial development of a region was progress and would naturally benefit both the area and its inhabitants.

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[38] Lloyd, "Canada's Northland,", 536.

[39] G.C. Monture, "The Indians of the North," Queen's Quarterly 66, no. 4 (Winter 1960): 556-563.

[40] R.A.J. Phillips, "The Arctic: Its Human Resources," Queen's Quarterly 66, no. 4 (Winter 1960): 569.

[41] Ibid., 570.

There were very few indications of concern about the wildlife of the North. Only one paper, by Donald Rawson, gave a good indication of the direction wildlife policy would soon be taking. Although Rawson is best known for his work in opening Great Slave Lake and Lake Athabasca to rational exploitation, and although much of his paper is couched in the terminology of economic conservationists, some of his comments indicate that he was moving away from conservationist ideals and towards preservationist ones. His premature death in early 1961 deprived Canada of an individual who surely would have become one of the great environmentalists.

Rawson urged the protection of northern forests and wildlife not so they might be harvested at a later date but because "there are aesthetic and recreational values...which defy any monetary measurement."[42] Rawson qualified this statement, as others would later, by pointing out the potential draw wilderness would be for tourists. He emphasised the need for large northern nature reserves due to the rapid shrinking of wilderness areas on the continent. He noted that the current levels of research were inadequate given the "problems of today and the new problems which we can expect to result from increased penetration of the North in the near future." Specifically crediting the AINA with organizing and stimulating research, Rawson noted the influence of early papers by Frank Banfield and Max Dunbar which had indicated potential problems between northern animals humans. He pointed out that, as transportation technology improved, investigations of the North would be made easier but it would also "render far more urgent the need for scientific information on which to base our plans for the economic utilization of biological resources."[43]

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[42] D.S. Rawson, "Biological Potentialities," in Underhill (ed.), The Canadian Northwest, 71.

One of the most important statements made at the Royal Society conferences was also one of the most innocuous. In his closing remarks to the conference on northern colonization Trevor Lloyd presented three "unique ideas" which he felt "the authorities will need to take into account" when planning the future of the North. The first was that the role of the natives must be paramount. Second, wildlife must be preserved for posterity. Third, control over non-renewable resources should be retained for the public good and not turned over to speculators.[44] In this simple statement, the significance of which even Lloyd may have been unaware, can be found the roots of all controversy which exists regarding northern development to this day.

Clearly a division in thought was beginning to occur. While all agreed on the need for planning and the desirability of multiple resource development they were becoming divided over the order in which things should proceed. While some scientists wanted research to centre on the best ways to extract minerals, or on ways to grow northern wheat, or to increase stocks of Arctic char, others wanted to ensure that a thorough understanding of the northern environment was in place before development began. It is in the insistence on the need for long term planning that we can find the seeds of the later opposition to development. In the thinking of many scientists the opening of the North was seen as a long term process to be based on scientific knowledge and not simply another resource boom. There were obvious tensions between those scientists concerned with the life sciences and the physicists, geologists, and geographers. More pronounced was the tension between the scientists and other professionals such as engineers, government officials and, especially, businessmen.

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[43] See A.W.F. Banfield, "The Present Status of the North American Caribou," Transactions of the Fourteenth North American Wildlife Conference (1949), 447-491; A. W. F. Banfield "The Plight of the Barren Ground Caribou," Onyx 4, no. 1 (1957): 1-20.; M. J. Dunbar, "Arctic and Sub-Arctic Marine Ecology: Immediate Problems," Arctic 6 (1953: 75-90.

[44] Trevor Lloyd, "The Future Colonization of Northern Canada," 158.

The ultimate expression of the Diefenbaker government's commitment to scientific management and wise use policies was the Resources for Tomorrow Conference held in Montreal in October 1961. The idea for the week-long conference originated with Diefenbaker and Alvin Hamilton in 1958 as a key part of their Roads to Resources programme. In preparation for the Conference the government asked a group of eighty experts to prepare discussion papers on the themes of Agriculture, Water, Regional Development, Forestry, Fisheries, Wildlife, and Recreation. These papers were published in two large volumes which were then sent to all of the delegates. Over seven hundred delegates from universities, government, and industry gathered to discuss the conservation issues raised in the papers. Although the conference was called to consider the natural resources of the entire country, the emphasis was clearly on the North. The conference was financed by the federal and all of the provincial governments and representatives of all governments were in attendance.

Resources for Tomorrow was chaired by Walter Dinsdale, who had replaced Alvin Hamilton as Minister of Northern Affairs and Natural Resources in 1960. In his opening remarks Dinsdale enthused "next to the Conferences which preceded Canadian confederation, this is the most significant meeting ever held in the history of our young nation."[45]

In contrast to the National Northern Development Conferences of 1958 and 1961, where government officials had portrayed the North as a frontier to be conquered, Dinsdale said that the holding of a conference such as Resources for Tomorrow was "particularly significant in a country like Canada where, up until recently, we had been motivated by a frontier philosophy in our exploitation of resources." He then went on to speculate that it was the possibility of running out of frontier that was responsible for awakening in Canadians a new desire to protect wildlife and land. "Perhaps it is this new northern orientation which, for the first time, has made us aware that, even in God's own Country, the natural endowment is neither inexhaustible nor indestructible."[46]

While Dinsdale's opening remarks might be seen as the hollow rhetoric of a minister who very much wanted to bring industry into the North, there were many present at the Conference who were very serious about promoting an ecological approach to the North and to Canada. Prominent amongst them were William A. Fuller, Professor of Zoology at the University of Alberta and a former Canadian Wildlife Service scientist; Ian McTaggart-Cowan; W. Winston Mair, Chief of the Canadian Wildlife Service; Douglas Clarke, and John Livingston, who would shortly resign his position as the executive director of the Canadian Audubon Society to become the first producer of CBC's "The Nature of Things" programme.[47]

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[45] Walter Dinsdale, "Historical Perspectives and Expectations of the Conference," in Resources for Tomorrow Conference: A Series of Background Papers for Discussion at the Resources for Tomorrow Conference Held in Montreal, October 23-28 1961. 3 Vols. (Ottawa: Queen's Printer, 1962), 3: 5.

[46] Ibid., 3: 5.

William Fuller, who had worked as a biologist with the Canadian Wildlife Service before joining the faculty of the University of Alberta, contributed a paper on the problems that occur when man impinges on wildlife habitat.[48] Fuller acknowledged that his thinking on the matter had been deeply influenced by the ideas of Aldo Leopold, ideas that Fuller believed were being ignored by most Canadians who were interested in developing Canada's natural resources.

To illustrate his point Fuller turned his attention to the North and the search for oil which had been underway, in northern Alberta, since 1947. He explained how, in the thirteen years since exploration began, surveyors had bulldozed almost 700 000 miles of exploration and seismic trails, leaving what amounted to great scars in the land. Fuller asked "will the search for oil in the Arctic result in destruction of the tundra on the same scale as the destruction of the Alberta forests? If so can the tundra, usually thought of as a rather fragile biome, withstand such destruction?" The answer, Fuller believed, was no.[49] According to Fuller the destructive influences of oil exploration epitomized the problem facing Canada, "will we allow the tundra community to be squeezed out of existence by burgeoning economic pressures such as the search for oil ?" [50]

Fuller's warning is one of the very first public statements about the possible destructive influences of the search for oil. He was particularly insightful in his assertion that simply searching for oil, quite apart from actually extracting it, could be extremely destructive to the natural environment. As late as 1970 exploration was still being be represented by industry as a purely scientific undertaking with no negative impact on the environment.

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[47] Also present at the conference but not giving papers were V. W. Bladen, Dean of the Faculty of Arts at U. of T.; W. T. Easterbrook, Chair of Political Economy at U.of T.; Blair Fraser, Editor of Maclean's; Louis Edmond-Hamelin of Laval; F.K. Hare of McGill; Diamond Jenness; Hugh Keenlyside, Richard Passmore, R.A.J. Phillips, R.G. Robertson, A.D. Scott; William Wonders.

[48] W.A. Fuller, "Emerging Problems in Wildlife Management," in Resources for Tomorrow, 2: 881-888.

[49] Ibid., 2: 884.

[50] Ibid., 2: 887.

In order to stop such destruction, and to assist in the development of an ecological conscience, Fuller recommended that Canadian scientists mount "a double barreled attack; acquire ecological knowledge and make sure it is widely disseminated." It was in carrying out the second component of this strategy that Fuller believed Canadian scientists had been particularly weak. For too long they had concentrated on learning and not enough on teaching. If the public could only be made aware of the danger development posed to wildlife then they would support more ecological research and pay attention to the findings. Most of the public's information about the North came from popular bestsllers which depicted the wilderness as hostile to man. Books such as Men Against the Frozen North and Three Against the Wilderness, Fuller believed, did nothing for the development of an ecological conscience. Fuller concluded his speech by calling for a "united front for conservation of wildlife in the next twenty years"[51]

Douglas Clarke also dealt with the issue of the ecological conscience. He believed that most people, as individuals, did care about wilderness and wildlife but that their ecological conscience was "underestimated because it is, for the most part, a private conscience rather than a public conscience." Canadian society was to blame for failing to put conservation issues to the fore. It was as a society that most Canadians agreed that the development of the North, the bringing of progress to what many viewed as a wasteland, was important. Canadians had a kind of double vision, argued Clarke, they admired nature as individuals, but as a group they valued material progress.

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[51] Ibid., 2: 887.

Clarke attempted to deal with the question "can we reconcile our vision of nobility, beauty, and permanent values with our desire for prosperity and progress?" While Clarke confessed to being unable to answer the question, it was quite clear he was not very sympathetic to the values of progress when he closed his paper by relating a story from a 1958 Gunther Schwab novel in which the Devil is a businessman. In that novel the Devil, who can only claim a soul if the person is responsible for his own downfall, tires of gathering souls one by one and decides to take them all together. He is able to trick all of mankind into damning itself by convincing them that Progress is always good. Each time mankind made what they took to be a step forward it was in fact a victory for the Devil. Drawing his conclusion from the theme of the novel Clarke stated "the finest satanic victories have been made to the accompaniment of loud and virtuous human plaudits."[52]

The idea that much environmental damage was being done unwittingly was one that was difficult for the scientists to get across. Many people found it difficult to understand how doing something which had always been considered a positive, even necessary, action, such as turning resources into useful products, could actually, in the long run, be damaging to the land. In the early 1960s when people heard that wildlife was being threatened they usually thought about it in terms of over hunting. It was this perception that Clarke was trying to dispel "Man as hunter is likely to be far less devastating than man as destroyer of habitat, sprayer of poisons, and introducer of exotic animals."[53]

One conference participant who had recently had first hand knowledge of the environmental damage that could be done inadvertently was Clarence Cottam. As the

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[52] C.H.D. Clarke, "Wildlife in Perspective," in Resources for Tomorrow, 2: 842.

[53] Ibid., 2: 839.

Assistant Director of the United States Fish and Wildlife Service Cottam played a significant role in the American DDT crisis which emerged in 1962 with the publication of Rachel Carson's enormously influential Silent Spring. The Fish and Wildlife Service, where Carson worked, had been the only government agency sceptical about claims that synthetic pesticides, such as DDT, were harmless. Cottam had been one of the first to voice concerns about the danger of DDT. Cottam's concerns were based on tests he had carried out in February 1946 in both the United States and Canada. As a result of his public statements Cottam was forced out of the Fish and Wildlife Service.[54] At Resources for Tomorrow Cottam contributed a background paper on the dangers of pesticide usage that was referred to several times by participants at the conference.[55]

While Fuller and Clarke only hinted at the steps that needed to be taken to help foster an ecological conscience others had more concrete suggestions as to what methods should be used. Winston Mair proposed the creation of a citizen's organization which would be responsible for ensuring that biological information was available to anyone who wanted it. More specifically Mair wanted the organization to be able to

> critically evaluate existing concepts and practices and report its findings to the public, ... examine and report on major industrial and other developments... [and] act as catalyst to bring together people, money, and specific agencies in a concerted approach to the solution of problems.[56]

John Livingston advised those who were interested in spreading the word about environmental damage that the most effective way to reach the public would be to make effective use of the mass media. He also proposed that when it comes to the development of natural resources the entire population of the country should be involved in deciding what is to be done and not just government departments and industry. "The whole of the Canadian public is involved and I think we should begin our deliberations with that in mind. Let us create a healthy, loyal opposition."[57]

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[54] On Silent Spring in general see Linda J. Lear, "Rachel Carson's Silent Spring," in Environmental History Review 17, no. 2 (Summer 1993): 23-48. On the controversy at the Fish and Wildlife Service see Thomas R. Dunlap, DDT, Scientists, Citizens, and Public Policy. (Princeton: Princeton University Press, 1981), 36. See also Clarence Cottam and Elmer Higgins, "DDT and its Effect on Fish and Wildlife," Journal of Economic Entomology 39 (February 1946): 42-52.

[55] Clarence Cottam, "Pesticides and Wildlife in Canada," Resources for Tomorrow Conference, 919-930.

[56] W. Winston Mair, "Elements of a Wildlife Policy," Resources for Tomorrow Conference, 2: 931-936.

Many ecologists believed that once the public was informed of the dangers development posed to the environment then industry policies and government laws would begin to change. This idea was developed by D.A. Munro who proposed that if the public could be educated enough about the dangers development posed to the environment then the laws governing development would follow suit. While he admitted that there was always a lag between "the crystallization of new concepts in the public mind and their reflection in the statutes" scientists could help by keeping the issue before the public and otherwise providing the leadership which would reduce that lag. [58]

J. R. Dymond concentrated on the need to create more nature preserves similar to those in England under the authority of the Nature Conservancy. Dymond, a professor of biology at the University of Toronto, had pioneered the practice of providing interpretive education to parks visitors at Algonquin Park in 1944 and had been one of the first to note the damage that was being caused to the park by overuse and insensitivity to the natural environment.[59] Dymond was one of the first scientists to suggest that land should actually be withdrawn from use.

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[57] See comments by John Livingston in the "Information-Education Workshop B,", Resources for Tomorrow Conference 3: 293.

[58] D.A. Munro, "Legislative and Administrative Limitations on Wildlife Management," Resources for Tomorrow Conference, 2: 868.

[59] J.R. Dymond, "The Organization of Wildlife and Fisheries Research in Canada," Resources for Tomorrow Conference, 2: 905 On Dymond's work at Algonquin Park see Killan, Protected Places, 77 and 123.

The complaint that not enough was yet known about the North to begin developing it was emphatically made by several participants. Ian McTaggart-Cowan noted that "the theme of human progress through the last two centuries has placed man in the dominant position." That position brought with it a responsibility to manage the land and, due to the complexity of management, more and more detailed knowledge was urgently needed. In Canada, where the place held by man in nature was shifting quickly "from primal, nomadic hunters through the agrarian to the urban industrial culture" in an extremely short period of time it was vital to understand and have a detailed knowledge of animals and their habitats if we were not to accidentally destroy their habitat.[60] McTaggart-Cowan noted the efforts of several prominent biologists and zoologists doing work on northern animals especially Frank Banfield on the caribou, Doug Pimlott on the moose, and William Fuller on wolves and bison.[61]

Trevor Lloyd was, of course, at the conference and he expressed concern about "an almost total lack of basic data" about the North and how "the intrusion of man into some regions is modifying drastically the original conditions, if resources are to be wisely used they must be studied and understood before it is too late."[62] Lloyd noted with dismay that, although there had been a noticeable increase in the number of scientists working in the North, the majority of them were in the employ of the oil companies and not disinterested scientists carrying out basic research. Lloyd complained that the results of the oil companies research were not available to the public. Lloyd pleaded for an increase in funding for basic research not tied to extractive industries. Without such research, he argued, an 'imbalance of knowledge' would occur which would skew planning and co-ordination. Like others at the conference, Lloyd was becoming increasingly concerned that the public knew so little about what scientists were doing in the North.[63]

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[60] Ian McTaggart-Cowan, "Review of Wildlife Research in Canada," Resources for Tomorrow Conference, 2: 890.

[61] Ibid., 2: 895.

[62] Trevor Lloyd, "Northern Research Review and Forecast" Resources for Tomorrow Conference, 2: 618.

At the conference itself the delegates concerned with wildlife held a series of workshops where they discussed and refined the ideas presented in the background papers. Many of the participants acknowledged being greatly influenced by the papers. The goal of one of these workshops was for the participants to devise a set of "Assumptions and Definitions" upon which they all agreed. Of these assumptions two merit special attention. First they agreed that it was the moral duty of the wildlife biologist to assume responsibility for providing leadership in the fields of wildlife management and the management of wildlife habitat. Second, they agreed that private organizations and individuals alike should contribute to the development of a public ecological conscience and attempt to influence the formulation of public policy.[64]

A second wildlife workshop, chaired by Ian McTaggart-Cowan, recommended among other things that wildlife values be assured on all Crown lands and when developing major projects. It also emphasised the need to clarify and amend jurisdiction with regard to wildlife to reflect these wildlife values.[65] G. W. Malaher, Director of Game at the Manitoba Department of Mines and Natural Resources, took some of Clarke's ideas further noting that technology was already affecting wildlife and its habitat to a "major degree". He predicted that the damage would only increase in the future and that Canadians must decide whether they want to "maintain our Canadian philosophy and tradition respecting wildlife and its utilization? Can we support it in our growing economy or do parts of it belong only in a pioneer economy?"[66]

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[63] Ibid., 2: 607.

[64] "Assumptions and Definitions," Resources for Tomorrow Conference, 3: 110.

[65] "Wildlife Workshop B," in Resources for Tomorrow Conference 3: 124.

The significance of the Resources for Tomorrow conference in the development of Canadian environmental thought cannot be overstated. It was the crucible from which emerged both the central ideas that would shape environmental thinking in Canada and many of the key personnel who would give those ideas form and substance. It provided a focus for the thinking of people who were developing similar ideas and allowed them to present those ideas to a receptive audience. For those who had already developed wilderness ideals it allowed them to find out who else thought as they did. For the majority of the seven hundred resource experts, however, it must have been a startling introduction to a new way of thinking about resources.

The essential ideas which emerged from Resources for Tomorrow were that scientists had a moral responsibility to society to disseminate ecological knowledge, that the the public would want to protect the environment if they knew the facts, that citizens could be informed through the work of environmental organizations and through the use of the media, and that once educated the public would force the government to enshrine environmental protection in law. A second major theme was that progress should no longer be assumed to mean industrial development and that there was a need to reconsider conventional attitudes towards both technology and the wilderness. It would be a mistake, however, to believe that these new ideas dominated the conference.

The vast majority of papers delivered at Resources for Tomorrow were firmly rooted in the traditional conservationist ethos. In other conference sections such as Agriculture, Water, and Forestry there was scant evidence of the new ideas that were sweeping wildlife thinking. The ideas outlined above were very much the exception rather than the rule and the preservationist ideal was far outweighed by those who advocated a more traditional type of economically motivated conservation. That said however, it is safe to say that the conference was hijacked by those who advocated protection of the wilderness for ecological and transcendental reasons. The ideas developed in connection with the Resources for Tomorrow conference, while very radical for 1961, became the dominant ideas in environmental thought in Canada in the years to come. After Resources for Tomorrow conference it was impossible to discuss resources without taking into account the ideas of Mair, Fuller, Clarke, Livingston, and McTaggart-Cowan. Without a doubt it represents the point in Canadian history at which the values of the "gospel of efficiency" began to give way to the values of preservation and environmentalism.

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[66] G.W. Malaher in "Wildlife Workshop B," Resources for Tomorrow Conference, 3: 124.

The differences of opinion between wildlife scientists and the physical scientist/engineer were dramatically illustrated by a rift that took place between two members of the Arctic Institute in late 1962. Representing as it did individuals from numerous academic disciplines, several government departments, and industry, conflicting opinions on what was best for the North were bound to arise amongst the members of the Arctic Institute. Nowhere did this conflict manifest itself so clearly as in an exchange of opinions that took place in the pages of Arctic in the fall of 1962.

On September 13, 1961 John C. Reed, the new Executive Director of the Arctic Institute and a mining geologist by training, delivered the opening address of the Second National Northern Development Conference in Edmonton. In his speech Reed declared that he was happy to be addressing the conference "because the interests of the Arctic Institute of North American and of the conference are so directly in accord."[67] Reed's speech dealt with the way in which scientific research could help industry to develop the resources of the North. He suggested a number of projects which he believed might be achieved immediately such as using atomic energy to raise the ground temperature of large areas by a few degrees or modifying the climate by "heating a lake." To test this idea Reed suggested a number of research stations be built around nuclear reactors and also a reactor-heated far northern lake.[68] Reed, it should be remembered, was addressing a group of businessmen and so may have tailored his comments to what they wanted to hear in an attempt to generate funding for AINA. His closing comments to the meeting were that "experience shows that basic research today becomes the basis for development tomorrow."[69] The paper was published in the Proceedings from that conference and then reprinted in Arctic.

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[67] John C. Reed, "Scientific Research and Northern Development," Arctic 15, no. 1 (March

Whatever his intentions, Reed's comments betray an astounding faith in technology and very little regard for the possible negative effects of heating up the ground or of using nuclear power to do so. Reed's faith in technology is again revealed when he refers to the stages science had gone through in a generation, "[we have had] the Air Age, followed by the Atomic Age. Now we are entering the Space Age."[70]

Reed's paper generated a quick response from William O. Pruitt, Jr., a wildlife biologist working at the University of Alaska. Pruitt argued that Reed's speech did not reflect the opinions of all those concerned with the North. He emphasized the need for research which would further the knowledge of the northern environment rather than research aimed at improving the profit of industry. "Management activities on the surface can hardly destroy the minerals and oil underground, but ill-considered and uncontrolled

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1962): 3.

[68] Ibid., 4.

[69] Ibid., 7.

[70] Ibid., 6.

exploratory or extractive activities for minerals and oil can easily destroy the natural ecological system of soil, plants, and animals."[71]

Pruitt was one of the very first scientists to draw attention to the fact that procedures which might safely be used in temperate climates might not work in the Arctic because of the slow recovery rate of the ecosystem. If untested procedures were used, or if development occurred without first learning about the area, then Pruitt predicted a "picture that is otherwise progressing towards a gloomy repetition of the unwise exploitation that occurred over much of the rest of the continent." Like many other scientists Pruitt argued for a multiple-resource approach to northern development. What made Pruitt's paper different from other papers advocating multiple use was that, in arguing for the multiple resource approach, he also called for the delay of extractive industries until other resources could by utilized. Pruitt dismissed claims that, because of its harsh climate, the future of the North lay only in non-renewable resources as being similar to "statements in old books about the wasteland of the "Great American Desert" and "Seward's Folly".[72]

The exchange between Reed and Pruitt generated virtually no comment from the readers of Arctic, many of whom may have felt that Pruitt was overstating his case. Pruitt, however, had been working at the University of Alaska where he had been involved in a project which had a profound impact on his opinions about northern research and technology and which gave him a special insight into the kind of projects that Reed was proposing. The project Pruitt was involved in is worth examination because it clearly demonstrates three key themes; the faith in technology that was prevalent at the end of the 1950s, the disregard with which the northern environment was held, and the willingness of governments to ignore scientific advice which does not support their goals.

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[71] William Pruitt, Jr., "Reply to the Commentary by John C. Reed," Arctic 15, no. 3 (September 1962): 238.

[72] Ibid., 238. In his reply to Reed's article Pruitt was refining many of the ideas he had been working on in the past. In a study he carried out for the Canadian Wildlife Service in 1958 Pruitt criticized biologists and wildlife managers who had forgotten that methods used in temperate zones could not be used in the north. see for example William O. Pruitt, Jr. "Snow as a Factor in the Winter Ecology of the Barren Ground Caribou," Arctic 12, no. 3 (September 1959): 159-179.; William O. Pruitt, Jr. "Animal Ecology and the Arctic National Wildlife Range," 12th Alaska Science Conference: Science in Alaska (College, Alaska: American Assoc. for the Advancement of Science 1961).

At the end of the Second World War the United States Atomic Energy Commission (AEC) began a program called Project Plowshares which, it claimed, sought to develop and promote peaceful uses of nuclear explosives. One such application was to use atomic bombs for large scale 'excavation applications'. In June 1958 the AEC announced its plans to detonate two one-megaton and two 200 kiloton explosives (the bomb dropped on Hiroshima was twenty kilotons) on the north slope of Alaska. The stated purpose of the blast was to create a large deepwater harbour for shipping.[73]

In response to recommendations by University of Alaska scientists that studies be done to determine the possible impact of the blast the AEC established a Committee on Environmental Studies for Project Chariot (CESPC) in February 1959. William Pruitt was assigned to lead the investigations for land animals while Don Foote, a twenty-eight year old geography graduate student from McGill University, was assigned to lead the human geography investigations.

When the official CESPC report was released in March 1960 it concluded that the proposed blast would have minimal detrimental effect on the environment. Not all of those who worked on the report agreed with the official conclusions, and Pruitt and Foote were amongst those who disagreed most strongly. Pruitt claimed that his research had been "diluted and aborted" by Brina Kessel the Chair of the University of Alaska Zoology department and the official liaison with the Atomic Energy Commission. Pruitt was fired from the University of Alaska following his protest that the blast might harm natives.[74]

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[73] Peter Coates, Trans Alaska Pipeline Controversy, 112.

Don Foote, who had wanted to "lift the lid off Chariot," exposing a project "rotten to its very bottom", resigned from Chariot in May 1961. Foote claimed that he had been naive to think the scientists could stop the blast.[75] In the fall of 1962 he taught a graduate seminar on Project Chariot at McGill. In a 1961 letter to his brother, Foote wrote about a new threat to the Arctic, "The new explorers up there are after oil...we must prevent the destruction of the Arctic as wilderness."[76]

After leaving the project Pruitt and Foote began actively protesting Project Chariot and making their information available to all who were interested. In June 1961 Barry Commoner's Committee for Nuclear Information (CNI) ruthlessly criticized the project. Using the studies of dissenting members of CESPC, including Pruitt and Foote, CNI's report emphasized the danger posed to the native population from eating the meat of caribou who had eaten lichen which was full of radioactive dust.[77] In April 1962 a highly critical article appeared in Harper's magazine; the article was co-authored by Don Foote's brother Joseph.[78] Although it refused to admit that the protest had played any role in its decision, the AEC cancelled Project Chariot in 1963. The active participation of Foote and Pruitt in protesting Project Chariot is one of the first example of scientists taking a political stand against environmental degradation.

With the election of the Pearson government in April 1963 interest in northern development faded. The Vision had been very much the work of Diefenbaker, Alvin Hamilton, and Merril Menzies and without their support development stalled. The replacement of Hamilton, who was transferred to the Department of Agriculture in 1961, with Walter Dinsdale was perhaps one reason.[79] Hamilton had been a forceful personality greatly dedicated to northern development, Dinsdale was not so forceful. Even with Hamilton, however, it is unlikely development would have taken off. Ken Coates has argued that the Vision created unrealistic expectations; resources were not as abundant or as easy to extract as was first thought.[80] Worse still was the 1958 decision of the United States Atomic Energy Commission to terminate its arrangement with Canadian uranium suppliers.[81] On top of all that the new government was not dedicated to northern development. Lester Pearson, who once mocked the ‘Roads to Resources’ programme as being little more than “building roads from igloo to igloo”, had other interests and problems. As the sixties began the attention of both the government and the public attention turned both southwards and inwards. Quebec, Vietnam, and the Americanization, both cultural and economic, of Canada were the issues of the day. [82]

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[74] Ibid., 363, note 71.

[75] Quoted in Ibid., 125.

[76] Ibid., 131. See also D.C. Foote and H.A. Williamson, "A Human Geographical Study," in N.J. Wilimovsky and J.N. Wolfe, (eds.) Environment of the Cape Thompson Region, Alaska, (Oak Ridge, Tennessee: Atomic Energy Commission, 1960):1041-1107.

[77] Committee for Nuclear Information, Project Chariot: A Complete Report on the Probable Gains and Risks of the AEC's Plowshare Project in Alaska. (St. Louis: CNI, 1961)

[78] Paul Brooks and Joseph Foote, "The Disturbing Story of Project Chariot," Harper's 224 (April 1962).

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[79] Granatstein, Years of Uncertaintiy and Innovation, 42.

[80] Coates, Canada's Colonies, 201.

[81] Zaslow, Northward Expansion of Canada, 252.

[82] John English, The Worldly Years: The Life of Lester Pearson: Volume II: 1949-1972. (Toronto: Knopf Canada, 1992); See also Blair Fraser, "What's Happening in the Canadian Arctic? Less and Less Since 1961," Maclean's 76 (23 February 1963): 1-2.

CHAPTER TWO

The Growth of the Northern Research Community, Educating the Public, and the Emergence of Environmentalist Groups

When, during the early 1960's, federal pressure to develop the North temporarily eased there was not nearly so much discussion about the problems of northern development in the academic and scientific community. There was, however, still a great deal of basic scientific research being done. The Northern Vision had created intense interest in the North and, in response, many universities had established northern studies programmes and institutes. In 1960 The University of British Columbia created the Committee on Arctic and Alpine Research, the University of Alberta began its Boreal Institute, and the University of Saskatchewan formed the Institute for Northern Studies. The following year the University of Manitoba established the Northern Studies Committee (under the guidance of historian W.L. Morton) and McGill University, which already housed the Arctic Institute, founded the Committee on Northern Research under the leadership of Trevor Lloyd and Don Foote. Although many University of Toronto faculty had been working on the North independently, it was not until late in 1966 that the U. of T. formed its Committee on Arctic and Sub-Arctic Research. All of these research groups were multi-disciplinary units and usually consisted of any academic department that wished to be involved. Disciplines represented on the various committees included microbiology, zoology, entomology, botany, geography, history, art history, linguistics, anthropology, engineering, and geology.[1]

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[1] For an overview of these organizations see W.O. Kupsch (ed.), Proceedings of the First National Northern Research Conference. (Saskatoon: Institute for Northern Studies, 1968). This conference was held October 30 and 31, 1967 at the University of Saskatoon. Organized by that university's Institute for Northern Studies and the Northern Co-ordination and Research Centre it was the first conference called to

Much of the funding for the northern studies programmes came from the Department of Northern Affairs and National Resources through its Northern Co-ordination and Research Centre (NCRC). Established in 1948 to co-ordinate research, both physical and social, that related to northern development and to ensure the distribution of information, the NCRC funded research by university scientists and by those in government departments.[2] The amount of funding the NCRC had available for northern studies programmes increased significantly over the 1963-1967 period. UBC's Committee on Arctic and Alpine Research, for example, received $1 500 in 1963 with which it funded one project; in 1967 it was granted $27 000 which was spent on twelve projects such as work on the ecology of tundra plants, arctic rodents, and on the beaver of the Mackenzie Valley Delta.[3]

The Arctic Institute also benefitted greatly from the support of the NCRC. Institute members carried out a great deal research in the physical and natural sciences throughout the sixties. In 1947 the Institute awarded four research grants; by 1965, largely with funds received from the NCRC, they made seventy research grants. One major project was the Devon Island Programme which was jointly funded by AINA, NCRC, and the National Research Council (NRC). The four year programme was designed to provide the first non-military permanent base facilities for biologists, oceanographers, meteorologists,

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co-ordinate Northern research. Groups interested in northern issues were asked to give synopses of their work and focuses so that overlap could be spotted and gaps filled.

[2] On the beginnings of the NCRC see Edgar Dosman, The National Interest: The Politics of Northern Development 1968-75 (Toronto: McClelland and Stewart, 1975), 2 and P.G. Nixon, "The Politics of Government Research," in Ken Coates and William Morrison (eds.) For Purposes of Dominion: Essays in Honour of Morris Zaslow. (North York: Captus Publishing, 1988), 38. Nixon's emphasis on the social anthropology emphasis of the NCRC is in some ways misleading. NCRC funding was given to the university organizations to distribute as they wished. While the NCRC's own research was focused on social anthropology the university groups were more concerned with natural sciences.

[3] Kupsch, Proceedings of the First National Northern Research Conference, 26.

geologists, and marine biologists to conduct long term observations.

The structural expansion of northern studies programmes and the related increase in funding gave scientists an opportunity to carry out the basic research they had always argued was necessary. Because there was not nearly so much pressure to develop the North as there had been in the Diefenbaker years scientists were able to work without the pressure of a boom period. Government and industry were still looking for economically viable resources to develop and so were quite willing to allow scientific research into the natural resources of the North.

It was not only northern studies programmes that expanded in the sixties; the entire Canadian academic community grew at an enormous rate. In the 1962-63 academic year there were 196 700 post-secondary students in Canada, ten years later that number had more than doubled to 513 400. Between 1959 and 1969 numerous new universities, such as York, Carleton, and Waterloo were formed and several colleges of provincial universities became autonomous universities in their own right (Lakehead, Regina, Calgary, Winnipeg, Victoria).[4] This growing university community resulted in an increased sense of importance for academics. Bothwell, Drummond, and English have argued that in this period the role of the educational-cultural elite became dominant, "the educator became a prophet, teachers seemed to affect eternity".[5] New concerns dominated university campuses and new ways of thinking about old problems were everywhere.

Science was also growing at a rapid rate. Between 1956 and 1966 the number of scientists and engineers in Canada rose from 69 000 to 115 000; of science and engineering graduate students from 1500 to 9000. In 1957 the National Research Council gave grants totaling $2.7 million, by 1966 the total was $34.4 million. During the same period the federal expenditure on Research and Development went up from $182.2 million to $319 million.[6] The increased number of people working in the sciences resulted in growing academic specialization. The increased funding meant that people could carry out projects that had previously been impossible.

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[4] Bothwell, Drummond, English, Power, Politics, and Provincialism, 334.

[5] Ibid., 279.

The growth of the university system, and the resulting increase in scientific specialization created an atmosphere that was ideal for the growth of scientific environmentalism. The growing prestige of the academic made it acceptable for them to publicly question authority and to form pressure groups. Increased scientific specialization allowed ever more detailed ecological studies to be carried out. The rise of funding, and the rapid increase in the number of graduate students, also facilitated this research. The detailed ecological studies of the mid 1960s were useful to scientists trying to demonstrate that the ecology of the North was threatened precisely because the studies had been carried out before development, and the accompanying damage, had occurred

The scientists of the Canadian Wildlife Service and those of the National Museum of Canada carried out a great deal of research in the North throughout the sixties. Founded in 1917 as the Dominion Wildlife Service the CWS had been a small unit within the Department of the Interior. Renamed the Canadian Wildlife Service in 1950 it was responsible for migratory birds throughout Canada, wildlife and fisheries in the national parks, and wildlife in the territories. The organization remained a small research unit of the department responsible for northern affairs throughout the 1960s and into the 1970s.

Before the establishment of the Canadian Wildlife Service there had been almost no government sponsored scientific wildlife studies. As the need for knowledge increased, in order to better manage the animals, the Canadian Wildlife Service began undertaking studies on particular species, most notably work on the barren ground caribou, the wolf, the murre, and the arctic fox. Many of these works became classics in the field of ecology. Because the CWS had no jurisdiction in the provinces, the majority of Canadian Wildlife Service studies throughout the sixties occurred in the Arctic or sub-Arctic.[7] CWS scientist began discovering the adverse effects of industrialization while carrying out their research. Leslie Tuck carried out many studies on the effects of oil on waterfowl in Newfoundland. The murre, which rides the ocean currents from the arctic islands to Newfoundland would often drift through large oil slicks, dumped at sea by unscrupulous sailors, and would become coated in oil, unable to swim and drown.[8]

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[6] "Whither Ottawa?: Three Statements Open a Dialogue on Policy," Science Forum 1 (February 1968): 2.

Canadian Wildlife Service scientists were extremely receptive to wilderness values and many of its top scientists such as W. W. Mair, R.H. McKay, A. H. Macpherson, L. M. Tuck, and D.A. Munro were responsible for instilling these values in the service. Mair and Munro had both made important contributions to Resources for Tomorrow as did former CWS scientist William Fuller. In addition the Service often contracted out work to university scientists such as W.O. Pruitt, Doug Pimlott, and R. E. Warner who expressed their views and issued warnings about the degradation of the flora and fauna in their reports.

The pro-wilderness attitude within the Canadian Wildlife Service had very little impact on government policy, however, because the Service had such little legal power or authority. As a unit within the DNANR it was overpowered by the developmentalists within the department. While the Service did exercise complete responsibility over migratory birds in the Territories and over animals which were in danger of extinction, that was the extent of its power. Its only other role was to provide advice on wildlife management to the department or to the Territorial council as requested. The overwhelming impression of Canadian Wildlife Service officials was that their recommendations were routinely ignored. [9]

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[7] J.P. Kelsall, The Migratory Barren-Ground Caribou of Canada. (Ottawa: Queen' Printer, 1968); A.H. Macpherson, The Dynamics of Canadian Arctic Fox Populations. (Ottawa: Queen's Printer, 1969); J.S. Tener, Muskoxen in Canada. (Ottawa: Queen's Printer, 1965); W.E. Godfrey, The Birds of Canada. (Ottawa: Queen's Printer, 1966).

[8] L.M. Tuck, The Murres. (Ottawa: Queen's Printer, 1960).

Throughout the sixties there occurred a marked increase in the public interest in nature and the outdoors. Activities such as camping, hiking, canoeing, and snowshoeing became increasingly popular. This had a great deal to do with the massive changes that were taking place in the population which was growing, getting younger, wealthier, more mobile, and better educated. Due to technological improvements in camping equipment it was now much easier to go camping.[10]

A second aspect of the wilderness boom of the 1960s was a change in the tone of nature writing. The 1960s saw a concerted attempt on the part of nature writers to show the complexities of nature and to present wilderness not as something to be feared but rather as a place of wonder waiting to be discovered. Writers such as Farley Mowat, Fred Bodsworth, Roderick Haig-Brown, Harold Harwood, and Franklin Russell began "expressing with increasing explicitness" Aldo Leopold's "ecological conscience" As T.D. Maclulich has noted,

> modern wilderness and nature writers, supported by a growing body of scientific knowledge concerning the

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[9] Doug Pimlott, C.J. Kerswill, and J.R. Bider, Background Study for the Science Council of Canada: Scientific Activities in Fisheries and Wildlife Resources. Special Study No. 15. (Ottawa: Information Canada,1971): 112.

[10] Geoffrey Wall and R. Wallis, "Camping for Fun: A Brief History of Camping in North America," in Geoffrey Wall and John Marsh, (eds.), Recreational Land Use: Perspectives on Its Evolution in Canada. (Ottawa: Carleton Library, 1982).

> workings of the natural environment, have...drawn our attention to the the interdependence of human society and the natural world.[11]

In addition to wilderness writing the 1960s also saw the introduction of wilderness television. CBC's The Nature of Things started in 1962 under John Livingston and with such prominent contributors as Lister Sinclair and ecologist William Gunn. The National Film Board aimed its cameras at the North. As Morris Zaslow has observed, television "was particularly effective in depicting and dramatizing harrowing situations and arousing the viewers emotions against environmental degradation."[12]

The growing interest in the outdoors resulted in the increasing prominence of naturalist organizations. Established groups such as the Federation of Ontario Naturalists (FON), the Manitoba Natural History Society, and other similar provincial groups saw their membership increase dramatically during these years. These groups provided an important constituency for new ideas about wilderness and were sympathetic to efforts to control pollution. As wilderness philosophy began to have an impact on the membership of such groups, many shifted their focus from traditional naturalist activities to preservation. The FON, for example, flourished under the presidencies of J. Bruce Falls, an ecologist and professor of zoology at University of Toronto and Fred Bodsworth, a popular nature writer. Under their leadership the FON became increasingly involved in pressuring the government to establish nature reserves an idea it had pioneered in 1958 when it sent a brief to the Ontario government suggesting how its parks could be managed from "an ecological perspective".[13]

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[11] T.D. Maclulich, "Reading the Land: The Wilderness Tradition in Canadian Letters," Journal of Canadian Studies 20 (Summer 1985): 42. See for example Franklin Russell, The Watchers at the Pond (Toronto: McClelland & Stewart, 1961); Farley Mowat, Never Cry Wolf (Toronto: McClelland and Stewart, 1963), Roderick Haig-Brown, Fisherman's Fall (Toronto W. Collin's Sons, 1964); Fred Bodsworth, The Sparrow's Fall (Garden City, N.Y., Doubleday. 1967); Harold Harwood, The Foxes of Beachy Cove (Toronto: Doubleday Canada, 1967).

[12] Zaslow, Northward Expansion, 269.

More important than the growth of the traditional nature groups, however, was the establishment of new wilderness groups such as the Canadian Wildlife Federation, the Nature Conservancy of Canada, and the National and Provincial Parks Association. These groups brought new ideas and motivations into the naturalist scene. While naturalist organizations such as the Ottawa Field Naturalists were traditionally involved in pastimes such as bird watching and bug collecting, the new groups were established with the specific goals of influencing government policy or protecting wilderness areas. These new groups were a direct result of discussions at Resources for Tomorrow.

The Canadian Wildlife Federation (CWF) was established in late 1961. It was established to link together the ten provincial wildlife federations which at that time were essentially 'gun and rod' organizations. From the beginning the Federation demonstrated a strong ecological bias and immediately took on such issues as DDT, native hunting, and northern development.[14] The CWF also actively participated in public education programmes, the highlight of which was their centennial year project of bringing wilderness education into Canadian schools.[15]

The ecological focus of of the CWF was assured in 1963 with the appointment of Richard Passmore as its Executive Director. Before joining the CWF Passmore had worked as a research biologist at the Ontario Department of Lands and Forests for fifteen years. While there he had been greatly influenced by the ideas of C.H.D Clarke. At the Resources for Tomorrow conference Passmore had been a prominent spokesperson for a national wilderness lobby.

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[13] Killan, Protected Places, 131.

[14] See issues of the CWF's newsletter, The Wildlife News.

[15] Pimlott, Kerswill, Bider. Background Study, 138.

Founded in 1963 the Nature Conservancy of Canada was another group that had its genesis at Resources for Tomorrow where it had been proposed by J. R. Dymond. The purpose of the group, based on the British organization of the same name, was to acquire and preserve ecologically significant land, to educate the public about the necessity to preserve the landscape, and to co-operate with other organizations in establishing wilderness reserves and encouraging scientific research. Founding trustees of the Conservancy included William Fuller, William W.H. Gunn, Roderick Haig-Brown, and John Livingston.[16]

Established in 1963 following the Resources for Tomorrow conference the National and Provincial Parks Association was intended as "an effective non-government watchdog over all Canadian Parks agencies." In 1964, with the appointment of director Gavin Henderson, it emerged as a strong proponent of preservation. Henderson had been extremely powerful at both the Conservation Council of Ontario and the Federation of Ontario Naturalists. After Henderson was appointed he and Doug Pimlott began to plan a similar organization to watch over Ontario provincial parks. This group would eventually become the Algonquin Wildlands League.[17]

The creation of these new activist groups along with the strengthening of the established organizations went a long way toward creating the "loyal opposition" that John Livingston had called for at Resources for Tomorrow. Through these groups new information and ideas could be presented to the public and, as their numbers increased, increasing political pressure could be placed on governments to respond to wilderness ideas. While such activist groups as the Canadian Wildlife Federation are often thought of as 'grass roots' organizations it should be noted that most of them were founded, organized, and run by professional ecologists like Passmore, Pimlott, Fuller, and Livingston.

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[16] William W.H. Gunn, "The Nature Conservancy of Canada," Ontario Naturalist 1, no. 3 (September 1963): 13-18.

[17] Killan, Protected Places, 159.

Another type of group that emerged in the early sixties was an association of the members of a particular scientific discipline. The large increase in the number of scientists working in Canada resulted in an increase in academic associations which focused on a particular discipline or sub-discipline. One such association was the Canadian Society of Zoologists (CSZ) which was founded in Ottawa in 1962. When it was founded the Society had 307 members; by 1967 its membership had increased to 587. The early years of the society were primarily focused on increasing the membership and determining the society's goals. There was very little consensus amongst the membership on the direction the society should take or on what its goals should be.[18]

An example of the division which existed in the society is illustrated by an early attempt by William Fuller and Doug Pimlott to protest the exploitation of natural resources within the National Parks. In early 1963 Pimlott and Fuller notified the executive of the society that they planned to submit a brief to the federal government explaining why logging, mining, and other commercial activities should no longer be allowed in the national parks. They asked the society to endorse their proposal and requested that it be sent as an official communication of the Canadian Society of Zoologists. The executive decided to put the question to a general vote. After lengthy debate a resolution advocating protecting the parks from "undue commercial and recreative exploitation" was narrowly approved by the membership.[19] It is doubtful the society's hesitancy to approve such a innocuous statement was due to any disagreement about ecological principles. More likely it indicated the resistance amongst many academics to becoming involved in public policy matters. The society's decision to approve the document was an important victory for Fuller and Pimlott and it set the society on a course it would continue to follow in the coming years.

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[18] Canadian Society of Zoologists, A History of the Canadian Society of Zoologists: The First Decade 1961-71. (Ottawa: Mutual Press, 1974), 9. This brief pamphlet, by an anonymous compiler, is of limited use.

[19] Ibid., 12.

The decision of the Canadian Society of Zoologists to establish themselves as a political force was one of the very first indications of a growing willingness amongst Canadian scientists to become involved, as scientists, in shaping public policy decisions. It was the first group exclusively composed of scientists to take an active role in protecting the Canadian wilderness. The following year a number of scientists would take another major step in forming the "loyal opposition".

In 1964 the CBC broadcast a series of twenty-six talks on "Science north of the trees" over its Northern Service. Developed in co-operation with the Arctic Institute of North America, the lectures dealt with many aspects of northern science with each lecture being delivered by a prominent expert in the field. Participants included Trevor Lloyd, Gordon Robertson, Diamond Jenness, Frank Banfield, A.E. Porsild, Max Dunbar, Ian McLaren, and J. Tuzo Wilson. The talks were enormously popular and, at the urging of Jim Lotz of the Northern Co-ordination and Research Centre, the Department of Northern Affairs arranged for publication of the talks in book form. The Unbelievable Land, as it was called, became enormously popular and was released in several printings.[20]

What is surprising about many of the essays is that they seemed to be intent on emphasizing the abundance of the North. The book contains short pieces on the animals, birds, plants, beetles, and even the butterflies of the North. In emphasizing this abundance the scientists created an image that was in stark contrast with the picture presented by those who argued that the North was little more than a storehouse of minerals. Through their lectures and the book they were presenting an idea of the North that had never before been presented to the public. An image emerged of an extremely delicate ecosystem in which man could play only the most minor role.

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[20] I. Norman Smith (ed.), The Unbelievable Land: 29 Experts Bring Us Closer to the Arctic. (Ottawa: Queen's Printer, 1964).

John Tener of the Canadian Wildlife Service wrote of the different varieties of bears, lemmings, muskoxen, wolves, hares, and shrews which inhabit the Arctic.[21] Frank Banfield emphasised the importance of the caribou and described how the introduction of modern technology - firearms - had caused "the seemingly numberless caribou herds ...to melt away"[22] Leslie Tuck wrote of the over eighty different species of birds that spend at least part of the year in the Arctic. He described how the North was one of the most important areas for the production of geese and ducks. In describing the habits of the thick billed murre he brought the creature to life describing their "intricate and beautiful joy-flights and underwater dances."[23] The scientists rarely described the animals as natural resources.

An image of the Arctic much different than the hostile wasteland of ice and snow emerged when Thomas Freeman and A. E. Porsild gave their lectures. Freeman, an entomologist with the Department of Agriculture, wrote of the many different kinds of flies and mosquitos to be found in the Arctic but he also wrote of the butterflies, moths, beetles, and bees that can live there. He argued that when people think of the Arctic they should think not only of ice and snow but of "the buzzing of bees, and the myriads of butterflies sipping nectar from the flowers in the meadows."[24] Porsild, Chief Botanist with the National Museum, talked of the many different kinds of flowers and plants to be found in the Arctic. "Spring comes with a rush in the Arctic. The snow seems almost to disappear as if by magic...and long before the last drifts have vanished, the first flowers appear."[25]

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[21] John Tener, "The Animals That Are There," in Ibid., 19-25.

[22] A.W.F. Banfield, "...Specially the Caribou," in Ibid., 26.

[23] Leslie Tuck, "Birds of the Arctic," in Ibid., 31.

The papers are also unique in how they emphasize the interconnectedness of the living things of the arctic. Ecology was still a new concept to most people in 1964 and the lecture by Ian McLaren, of the Marine Sciences Centre at McGill, was one of the first mentions of it in a Canadian book intended for the general reader. McLaren's paper emphasised the simplicity of the Arctic ecosystem and the danger of extinction to a species if the 'web of life' were somehow disturbed.[26]

Another unusual characteristic of The Unbelievable Land is concern for the native people of the North, the Indians and the Inuit. Trevor Lloyd restated the three 'unique ideas' he had presented at the 1961 Royal Society meeting. This time, however, he put more emphasis on the responsibility of government to "see to it that those very able and interesting people, the Eskimos...are able to develop to the maximum that they can, and are given as much responsibility as possible in their own northern land."[27]

Gordon Robertson expressed a common belief that irreversible damage had already been done to native culture and that the opportunity to return to the old ways had long passed. Robertson attempted to justify the disappearance of the old ways by speaking of "progress". Many of the old native ways had to change, he argued; it was no longer acceptable, for example, for the Inuit to kill excess new born girls or to abandon old people. The native people, he stated, must join the modern age if they were to be part of the great things that Canada was going to do in the North. In Robertson's words it was crucial that the northern way of life "marry its heritage to the age of the atom."[28]

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[24] T.N. Freeman, "...and Butterflies and Beetles Too!," in Ibid., 34.

[25] A.E. Porsild, "The Plants of the Arctic," in Ibid., 44.

[26] Ian McLaren, "Marine Life in Arctic Waters," in Ibid., 93-97.

[27] Trevor Lloyd, "The Land and the People," in Ibid., 4.

Lloyd's idea that the native people should be the beneficiaries of any sort of development is one that was just beginning to be heard in 1964. Economist Ken Rea of the University of Toronto proposed that "a different type of development" should be encouraged in the North. This new development would be based not on the basis of "commercial profitability" but rather on "the suitability as means of increasing the income of the fifteen and a half thousand Indians and Eskimos."[29] One of the inherent problems with Rea's suggestion was that different people had different ideas of what would be good for the natives; developers argued that they would benefit from oil and mining while others thought that the more traditional economies of hunting and trapping should be encouraged. This question would become one of the central points of the debate over northern development that would emerge in the early 1970s.

This concern for the native people of the North found full expression in a second volume of lectures published by the Department of Indian Affairs and Northern Development.[30] Like The Unbelievable Land, People of Light and Dark contained a series of short essays by prominent northern experts; contributors included Don Foote and Jim Lotz the Research Director of the Canadian Center for Anthropology, and Frank Vallee of Carleton University.

Although necessarily brief, the essays are remarkable in their realistic approach to such issues as the legal problems, mental health, and medical and educational needs of the native population of the North. They show a real concern for the problems caused by the encroachment of white society on the North, and a genuine concern that future exploitation of the North should not cause more trouble. There was no attempt to disguise the fact that natives had been treated poorly or that they faced a difficult future. David Damas concluded that the control of "most decision-making by the white agencies deprives the Eskimo community of self-sufficiency in social organization. A general lack of local resources and industries keep the Eskimo dependent on the outside."[31] In the conclusion to the volume Earnest A. Cote claimed that "Among the first objectives of the government is the participation of the northerners in their own development. The government is striving to provide schooling, vocational, and occupational training and university opportunities to enable the people of the North to be competitive in the 20th century."[32]

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[28] R. Gordon Robertson, "The Long Gaze," in Ibid., 136.

[29] Ken J. Rea, "The Problem of Economic Development in the Canadian Arctic," Queen's Quarterly 71 (Spring 1964): 92.; Rea later expanded on these ideas in Ken J. Rea, The Political Economy of the Canadian North. (Toronto: University of Toronto Press, 1968).

[30] Maja van Steesel (ed.), People of Light and Dark. (Ottawa: Queen's Printer, 1966).

The rise of concern for the native people of the North is an important theme of the mid-sixties in Canada. The concern, however, was primarily one of how to cure immediate economic and social problems and not with how to ensure that native culture survived. The government was willing to make some attempt to help the native people as long as they did not get in the way of development. If they cooperated, the thinking went, they would reap the benefits of development and would soon share in Canada's rising standard of living.

The Unbelievable Land and People of Light and Dark represent the first real attempt by Canadian scientists to convey the results of their research to the general public through the mass media. Similarly, the brief sent by the Canadian Society of Zoologists to the federal government was the earliest case of a group of Canadian scientists offering unsolicited opinions on the need to protect the wilderness. Clearly many scientists were no longer content to carry out their research in relative obscurity, writing up their results and hoping someone would take note.

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[31] David Damas, "Eskimo Communities Then and Now," in Ibid., 118.

[32] E.A. Cote, "Conclusion," in Ibid., 142.

In 1964 many scientists agreed with ecologist Pierre Dansereau when he remarked "we...are on the threshold of a new era in which we shall have to redefine our terms and our tasks."[33] There were several reasons why Canadian scientists were, as of the mid 1960s, willing to take on the new tasks of educating the public and influencing government policy. The first, quite simply, was that a growing body of evidence was emerging from which evidence could be drawn. In addition an increasingly coherent ecological philosophy was taking hold of the biological sciences. That this philosophy was to be found in the universities was not surprising, but it was also pervasive in the Canadian Wildlife Service which, as a branch of the government might be expected to resist such radical ideas. Secondly, the growing number of scientists allowed them to exercise a degree of political organization that had been impossible before the expansion of the universities and of science. A third factor was an increasing societal acceptance of dissent from government policy. Starting with the 1961 Voice of Women and Combined Universities Campaign for Nuclear Disarmament protest in Ottawa, the Canadian citizenry showed a new willingness to tolerate radicalism. Finally the methods of pressure group tactics, which originated with the United States civil rights movement, had become widely known.

Throughout the sixties there was an increasing awareness, both in Canada and around the world, of the impact that pollution was having on the earth. People everywhere were becoming aware that the affluent lifestyle they had been living since the end of the Second World War had come at great cost to the air, water, and land. Increasingly it was being demonstrated that the everyday conveniences Canadians took for granted were poisoning the environment. The idea that automobile exhaust contained carbon monoxide, sulphur dioxide, hydrocarbons, nitrogen oxide, and lead particles was new to many people, even scientists. The idea that environmental damage was very often the result of unanticipated effects of industrial activity was an especially difficult one to get across.

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[33] Pierre Dansereau, "The Future of Ecology," Bio Science, 14, no. 7 (1964): 23.

The National Conference on Pollution and Our Environment was held in Montreal in the autumn of 1966 with the objective of coming to a set of practical and reasonable guidelines for the control of environmental pollution.[34] While the conference did not deal specifically with the North or northern development it did deal with important related issues and demonstrates the direction thinking was taking.

O. M. Solandt, who had become the Chancellor of the University of Toronto and the Chair of the Science Council of Canada, gave a speech to the over one thousand delegates in which he outlined his belief in the need for 'systems thinking' in all development. Systems thinking, as applied to development, is the practice of anticipating the effects of a development project on its surroundings. How a dam will effect the downstream section of a river for example. Solandt went on to make an "impassioned plea for the retention of selected and representative parts of Canada.". He recounted how on his annual summer canoe trips he was becoming more and more aware of the damage being caused by development.[35]

D.A. Munro, a director of the Canadian Wildlife Service and V.E.F. Solomon, Staff Specialist in Migratory Bird Habitat at DNANR, contributed a paper on water pollution which summarized research on the effect of oil spills on birds. Munro reported how, even in very small quantities, oil could cause severe damage or death to birds, by coating them with oil, destroying their waterproofing, and opening them to death from infection. He reported on Canadian Wildlife Service studies in northern Labrador that had discovered eleven species of dead birds washed up on the shore in one day.[36]

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[34] Canadian Council of Resource Ministers, Background Papers Prepared for the National Conference on Pollution and Our Environment Held in Montreal from October 31 to November 4, 1966 3 vols. (Ottawa: Queen's Printer, 1966).

[35] O. M. Solandt, "Man and his Environment: Problems in Human Ecology," Ibid., 45-52.

In 1968 Doug Pimlott and Abbot Conway along with Bodsworth, Falls, and Littlejohn formed the Algonquin Wildlands League (AWL), a pressure group dedicated to saving Ontario provincial parks from destruction by forestry and mining. Walter Gray, who had been chief Ottawa correspondent for both the Globe and Mail and the Toronto Star was in charge of the AWL's media relations.[37] Gerald Killan and George Warecki have written about the AWL and its role in the emergence of environmental politics in Ontario.[38]

In 1968 Max Dunbar was elected president of the Canadian Society of Zoologists for the 1968-69 year. Dunbar brought to the society an increased emphasis on environmental degradation and the need for scientists to intervene in natural resources policy decisions. According to the anonymous compiler of the society's corporate history that emphasis "became the dominant *raison d'étre* that boosted the society's relevancy and recognition...and provided a new thrust and dimension to the society's activities from which there was no turning back."[39] After Dunbar the society would no longer follow the tradition of scientists being dispassionate on matters of science.

In January of 1969 the Society resolved to prepare a statement on present and future problems of environmental degradation. Designed not for the specialist but rather for public distribution, the brief was intended to put forward ideas and viewpoints which

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[36] D.A. Munro and V.E.F. Solman, "The Impact of Water Pollution on Wildlife" Ibid., 67-68.

[37] Killan and Warecki, "The Algonquin Wildlands League,", 24, note 35.

[38] Ibid., 2-27.

[39] History of the Canadian Society of Zoologists, 33.

Dunbar felt "were of the utmost importance and which so far had not appeared from any other source in the country."[40] The brief, entitled Rape of the Environment, was prepared with federal and provincial governments and the news media specifically in mind and was sent to the federal government. It featured contributions by Ian McTaggart-Cowan, Doug Pimlott, Max Dunbar, and W.O. Pruitt, Jr., and was intended as a warning to senior government officials of the damage that was being done to the Canadian environment. It recounted in clear, precise language the damage that its authors had noticed while carrying out their research.[41]

Later Dunbar would recall that he wrote the brief and involved the CSZ in politics because typical protests,

> were often too emotionally presented, with too narrow an interest, and that there was a need for statements from professional bodies, emotionally cold but professionally warm, which would arm the biological side of the dialogue with far more formidable weapons than were in use at that time. And indeed it is true that the ecological arguments against pollution are just as powerful and as ruthless as the pressures for 'progress' and the unthinking exploitation of natural resources.[42]

By the late sixties wilderness values and concerns about pollution were becoming widely accepted amongst zoologists and wildlife administrators, and were increasingly finding acceptance amongst other scientists. Despite this, such values had made very little impact on industry or senior government officials. Nowhere was this failure to reach the developers so apparent as at the National Northern Development Conferences held every three years in Edmonton. As in 1958 these large conferences remained the exclusive domain of government and industry representatives; from 1958 until 1970 not a single biologist or zoologist was invited to speak to the Conference. To the businessmen who attended the conferences the environment remained an obstacle to conquer, and science and technology were the tools that could be used to defeat it. The dominant belief about northern development remained that the future lay in mineral development. The attitudes towards the land changed very little despite the increasing concerns about pollution that were, by the late 1960s, everywhere.

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[40] Max Dunbar, Environment and Good Sense: An Introduction to Environmental Damage and Control in Canada (Kingston and Montreal: McGill-Queen's University Press, 1971), 3.

[41] History of the Canadian Society of Zoologists, 35; Canadian Society of Zoologists, Rape of the Environment: A Statement on Environmental Pollution and Destruction in Canada (mimeographed copy) .

[42] Dunbar, Environment and Good Sense, 3.

An interesting exception to the type of thinking found in the National Northern Development Conferences emerged in the spring of 1967 when Richard Rohmer, a Toronto land-use lawyer, had a new northern vision. Rohmer proposed developing the enormous area of land which lay between the Arctic and the narrow strip of land where most Canadians lived. Calling this area the 'Mid-Canada Corridor' or the 'Green North' Rohmer proposed the full-scale development of the area and the establishment of permanent northern communities across the country.[43]

Rohmer contracted with Acres Research and Planning Ltd., a Toronto engineering firm, to research the proposal. Acres undertook a study of the climactic and physiographic regions, the potential for vegetation, soil capability, mineral deposits, hydro potential, tourism, transportation and communications needs, and the potential for large settlements. Predictably the Acres report was very enthusiastic; the research team concluded that Canada "is expected to become a giant among the productive nations of the world" and that its "future is inseparably linked with the development of Mid-Canada."[44]

Central to the success of the Mid-Canada program was the implementation of a national development program which included the building of a new railway. The railway would run from Newfoundland to Great Slave Lake, and from there to Tuktoyaktuk. This would necessitate the laying of over four thousand miles of new track at an estimated cost of $1.2 billion dollars. Growth centers along the railway would be based on existing communities such as Whitehorse, Hay River, Flin-Flon, Port Arthur- Fort William, Noranda, and Labrador City, each of which was expected to have a population of up to half a million people.[45] The Acres report showed much of the same faith in technology as earlier northern boosters and endorsed continued research into the use of such items as hovercraft, nuclear submarines and reactors, and huge enclosed 'bubble cities'.[46]

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[43] Acres Research and Planning Limited, Mid-Canada Development Corridor ... A Concept. (Toronto: Privately Published, 1967; reprint ed., Thunder Bay: Lakehead Univ. 1969.) unpaginated.

[44] Ibid., section 1 - Introduction..

The Mid-Canada concept was greeted with an almost unbelievable degree of support from government, industry and academics. This support manifested itself in August 1969 when Lakehead University hosted the first session of the Mid-Canada Development Corridor Conference. The conference was attended by representatives from seventy-three corporations, twelve universities, two labour unions, six provincial governments, the federal government, and members of the Métis, Inuit, and Indian communities.[47] The keynote addresses were delivered by, among others, Omond Solandt, a self-described "wilderness nut", William Schneider, President of the National Research Council, and Roland Michener, the Governor-General of Canada. [48]

While the members of the Mid-Canada conference were not overly optimistic about the ease with which the Mid-Canada zone could be developed, the general consensus was that the problems were surmountable and that in surmounting them new social benefits might be realized. In the words of Rohmer they could "establish a new style of living". Almost all members of the conference agreed that the key issue was to ensure that the use of the North and the development of Mid-Canada should be controlled, using the best research and planning technology available.

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[45] Ibid., section 21- Implementation.

[46] Ibid., Appendix II - Concepts of Northern Settlement.

[47] For a full list of participants see Mid-Canada Report: Report of the Mid-Canada Development Conference. (Privately published by the Mid-Canada Development Foundation, 1971): 110-113.

[48] See Essays on Mid-Canada: Presented at the First Session of the Mid-Canada Development Corridor Conference (Toronto: Maclean-Hunter Limited, 1970).

Part of this 'new way of living' would be a concerted effort to implement ecological values. Rohmer invited William Fuller, Donald Chant, forester N.L. Kissick , and Bruce Thom of the McGill Sub-Arctic Research Laboratory to participate in the conference as speakers on Environment and Ecological Factors.[49] Rohmer could not have picked two scientists who would have been considered more opposed to development than Fuller and Chant. Fuller's ideas have been discussed above. Chant, Chairman of the Department of Zoology at the University of Toronto, was becoming greatly interested in the effects of pollution and had been instrumental in founding the activist environmental group Pollution Probe in March 1969.

In his address to the Mid-Canada Conference Chant chose to play the role of the Jeremiah "because any good idea is tempered by criticism and by challenge to its basic roots."[50] The stated purposes of the Mid-Canada corridor were to ensure the optimum use of resources in Mid-Canada, the accommodation of an increased population, and the creation of a higher standard of living for all Canadians.[51] Acknowledging that the third purpose was difficult to fault Chant questioned the desirability of the first two goals. Chant agreed that the 'optimum use of resources' was highly desirable but he warned

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[49] N.L. Kissick, "The Forests of the Mid-Canada Corridor," in Ibid., 177-184.; Bruce G. Thom, "Environmental and Ecological Factors in Eastern Mid-Canada," in Ibid., 185-192.

[50] Donald Chant, "Environmental and Ecological Factors in Canada: Problems and Challenges," in Ibid., 155-161.

[51] See Richard Rohmer, "Foreword," in Ibid., 1-2.

> we should be a little cautious about intent here, and definition...Optimum means 'best' and we must include in this commitment not only factors of economics but also those of sociology that reach into every sector of our country and affect the activities of every citizen in every walk of life.[52]

Chant then went on to argue that "resources should not be exploited unless they are urgently required for some specific purpose". To the second purpose, accommodating an increased population, Chant took also great exception. The population of Canada must be controlled, he argued, not encouraged to grow.

The main emphasis of Chant's argument, however, was that any northern development must be preceded by "extensive base-line research on renewable resources and other living components of the area." This would have to be followed by experiments on any proposed activity to determine its potential impact and finally continuous monitoring of any activities "to ensure their maximum compatibility with the total northern environment and to ever increase the precision and quality of our knowledge." "Most important of all, we must include specific plans for such research as a prelude to any development activities and insist that the initiation of such activities await the accumulation of the essential knowledge on which they must be based. If we fail in this we will simply be writing another sordid chapter to our record of environmental destruction." [53]

Fuller proposed many of the same ideas as Chant with the addition that he asked the conference to consider not only the advantages of establishing a plan for development but also to examine "*all sides* of the question of development " including whether development should proceed at all.[54]

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[52] Chant, "Environmental and Ecological Factors in Canada,"in Ibid., 156.

[53] Ibid., 161.

[54] W.A. Fuller, "Energy as an Ecological Factor in the Mid-North," in Ibid., 166.

If one disregards the significant contributions of Fuller, Chant, and Thom there is not an enormous amount of difference between most of the papers delivered at the Mid-Canada conference and those delivered at the Northern National Development Conferences. The same attitudes are present: the environment as the enemy, the power of technology to overcome all obstacles, the reliance on mineral resources to create wealth.[55] This fact was recognized by at least one member of the conference who presented a very critical appraisal of the whole plan in her keynote address.

Mildred Fiorito, who was described only as a 'Northwestern Ontario Citizen active in community affairs', addressed the conference in a colourful, forthright manner that left no doubt about her opposition to the Mid-Canada concept. While she admitted to great respect for the ideas expressed by the "more thoughtful element" and she acknowledged that "some fine scholarly words [were] spoken" nonetheless she maintained an intense distrust of the predominant group [industry] taking part in the conference. Her fear was that the warnings of the 'thoughtful element' would be ignored. "I have no sense at all that there is any real basic change taking place in the thinking of those most strongly involved in this conference. Past records speak for themselves." She considered the conference and the concept "a Trojan horse, brought into our midst with smiles and sweet words, to effectively lead the people into a scheme that will be disastrous for them." [56]

At the second Mid-Canada Conference in June 1970 several taskforces were struck to come up with recommendations on which planning should proceed. The Task Force on Environment and Ecological Factors was headed by architect Raymond Moriyama and included Chant, Fuller, Kissick, and Thom. The environmental task force made several recommendations which clearly show the influence of Chant and Fuller. Amongst the proposals were that in Mid-Canada the concept of waste disposal should be abandoned and replaced with "total recycling of materials and restrictions on the production and consumption of some consumer goods", that there be "conservation of resources until a need is demonstrated, and a commitment to keep the maximum number of development options open in the North", clearly defined and quantified environmental standards accompanied by the complete acceptance by developers that they are responsible to "ensure that no irreversible damage to the ecosystem will result from their proposals" The environmental group also "urgently recommended" that a body "similar to the Economic Council of Canada or the Science Council," be established to set environmental goals for Canada and to advise the government.[57]

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[55] See especially A.V. Mauro, "The Canadian North: A Policy for Progress," and George Jacobsen, "Industrialization in the Middle North: A Challenge for Economic Resource Planning,"in Ibid.,

[56] Mildred Barret Fiorito, "Address," in Ibid., 47-53.

The Mid-Canada project might well have become a great success. It certainly enjoyed a great deal of intellectual support and, by all evidence, was well planned and incorporated the "systems thinking" advocated by Solandt and others. Rohmer and his associates appear to have been genuinely concerned about the well being of the environment. It must be remembered, however, that Mid-Canada was a development scheme and Rohmer and his associates were in it to make money. What is significant is that they did invite prominent members of the emerging environmentalist cause to assist in the planning. At a time when the organizers of the National Northern Development Conference had not invited a single biologist to speak, Rohmer invited Chant and Fuller, two of the most outspoken proponents of wilderness values. Whether or not Rohmer's commitment to the environment was genuine is open to debate but it is extremely important that ecological ideas had come to dominate in such a way that he felt a compulsion to include them in his conference. The potential of the Mid-Canada plan would never be realized, however, for even while the planning was underway the discovery of enormous reserves of oil at Prudhoe Bay, Alaska eradicated any hope of an orderly, well planned scheme of northern development.

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[57] See Raymond Moriyama et al. "Report of the Task Force Committee on Ecological and Environmental Factors,", 23-24. Mid-Canada Task Force Reports. (Toronto: Mid-Canada Development Foundation, 1971)

With the discovery of oil in the North there was once again a very real threat that development would greatly outstrip knowledge of the effects of development on the environment. Both industry and government were eager to go after the oil, and they did not hesitate to invoke 'the future of Canada is the North' type of rhetoric to do so. At the same time as the first seismic crews were streaming into the North, however, Canadian scientists continued to become increasingly vocal about protecting the environment and increasingly willing to attempt to influence public policy.

In February 1968 Science Forum began to be published at the University of Toronto. It described itself as a new journal, representing no political persuasion or group, "dedicated to closing the gap between public policy and advancing science and technology and the cultural one between science and the layman." Science Forum saw itself as a venue for Canadian scientists and engineers to discuss the vital issues of the day and the "previously unknown problems" which had resulted "from the explosive growth of science and technology".[58] Science Forum was one reaction to an emerging debate over science policy in Canada which revolved around the issues of what type of science, applied or pure, government should fund, and which disciplines should be supported.[59]

In February of 1969 Science Forum devoted a special issue to the question of northern development. The editorial of that issue, entitled "The Eleventh Hour on Our Last Frontier", emphasized that Canada was in a "unique position among the countries of the world, in that we can still choose how to develop as well as exploit these resources." The editors viewed the North as an opportunity to "use science and technology to improve the quality of life rather than to debase it".[60]

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[58] "Editorial," Science Forum 1, no. 1, (February 1968): 2.

[59] G.B. Doern, Science and Politics in Canada (Montreal and Kingston: McGill-Queen's University Press, 1972); Canada, A Science Policy for Canada; Report of the Senate Special Committee on Science Policy. (Ottawa: Queen's Printer, 1970).

Ian McTaggart-Cowan, who was now Dean of the Faculty of Graduate Studies at the University of British Columbia, put the issues of western man's impact on the northern environment into a long historical context. He argued that from the beginning the exploitation of resources has had a negative, often unknown effect on the arctic environment.[61] McTaggart-Cowan claimed that, although the most destructive activities to be carried out in the North were mineral prospecting and development, environmental damage "is not an essential feature of the discovery and development of mineral deposits". What was needed to prevent damage was a full understanding of the "ecological and aesthetic problem, and resolve to devise rules of behaviour that will permit the extraction of mineral resources without the destruction of other values".[62]

Jim Lotz, the associate director of the Canadian Research Center for Anthropology in Ottawa, proposed an idea that would come to play an important role in the northern debate. Lotz fiercely criticized development plans as a "short term looting operation that may do incalculable harm to the human and physical environment unless it is replaced by a rational, scientific approach to development." He dismissed the idea that the Inuit should be trained to work in industrial developments, "Why should northern people get involved in such enterprises when these ventures are damaging their land?"[63] Like other writers considering the nature of northern development Lotz also compared the North to the West, but with an important difference. "The ruthless misuse of natural grasslands in the American Middle West led to disastrous dustbowls. What will be the results of abuse in the North?"

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[60] "Editorial" Science Forum 2, no. 1 (February 1969): 2.

[61] Ian McTaggart-Cowan, "The Ecology of the North: Knowledge is the Key to Sane Development," Science Forum 2, no. 1 (February 1969): 3-8.

[62] Ibid., 6.

The next month McTaggart-Cowan pointed out that the "assumption of dilution", where it is assumed that if a small amount of toxic material is released into a large body it will dilute below the level of toxicity, no longer applied due to radioactive waste and DDT, both of which were beginning to show up in the blood of northern natives and animals. The assumption of dilution was so widely accepted, argued McTaggart-Cowan, that no one questioned it or its corollary "the right to pollute until detailed scientific proof of damage to man is produced." McTaggart-Cowan suggested that policy makers should adopt "the principle behind the licencing of drugs for use on man - that permission be refused until there is detailed scientific proof that the pollutant will do no damage to the biosystem."[64] This idea would come to the fore again and again as northern development progressed. Both in terms of actual pollution and in terms of the pipeline itself. Developers often asked how the development of such a small area of land could have any impact on the overall environment of an area the size of the Canadian North. It was this question that scientists had to answer if they wanted to halt poorly planned development.

McTaggart-Cowan went on to predict the emergence of a 'protection movement' of people concerned with maintaining natural ecological conditions. He argued that this group would "not [be] generally antagonistic to economic development and to the use of natural resources for human enrichment." He predicted that such a group would "increasingly appear as the conscience of our society".[65] McTaggart-Cowan's prediction proved to be prophetic. A few weeks after the article appeared Pollution Probe was formed at the University of Toronto.

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[63] Jim Lotz, "Man Must Be the Measure of Future Northern Plans - Not Mineral Resources," Science Forum 2, no. 1 (February 1969): 13-17.

[64] Ian McTaggart-Cowan, "Ecology and Northern Development" Arctic 22, no. 1 (March 1969): 10.

Pollution Probe was established in March 1969 by students and staff from all disciplines of the university. The group grew quickly, numbering over one thousand members by April 1970. Although Probe had no official executive body it was generally acknowledged to be largely the work of Donald Chant, Monte Hummel, and Tony Barret. Chant's depth of feeling about the environment is expressed in his explanation that Probe was founded because "there were ills in a society that permitted such moral outrages [as pollution] that called far more urgently for condemnation than the Vietnam war"[66]

In establishing Pollution Probe Chant and the others examined the work of existing Canadian environmental pressure groups such as the Algonquin Wildlands League, the Canadian Wilderness Federation, and the Nature Conservancy, as well as American groups such as the Sierra Club and the Wilderness Society to see where they had been effective and where they were weak. The result was a set of guidelines which they believed a citizen's organization must follow if it was to be a successful force in shaping public policy.[67]

Chant recognized that there might be legitimate reasons, such as getting fired, for scientists in government and industry not to speak out on pollution and development. For that reason, he argued, it was the duty of university scientists to play the role of the Jeremiah. "It is a major responsibility whose abdication can be read only as a lack of interest in the world around us and callous disregard for the welfare of our society as a whole."[68] Probe was perhaps the premiere example of the citizen's groups that emerged in the late sixties. Bothwell, Drummond, and English have said of these groups that they were "a reflection of a new willingness to test limits, a thirst to taste what was new."[69]

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[65] Ibid., 11.

[66] Don Chant, "Pollution Probe: Fighting Polluters With Their Own Weapons," Science Forum 3, no. 2 (April 1970): 19.

[67] Chant, "Pollution Probe,", 20. These principles were (1) individual action is almost useless (2) identify specific problems, it is useless to make vague protestations about environmental degradation (3) be sure of the facts - have well respected professionals, engineers, biologists, lawyers, and chemists to provide the evidence (4) make effective use of the media (5) engage in public education campaigns (6) be responsible and credible (7) establish a recognized, stable physical presence (8) deal only with senior staff; don't waste time with bureaucrats.

In October 1969 the University of Alberta hosted a major conference on the ecology of the tundra environment which was organized by William Fuller and entomologist Peter Kevan. Sponsored by the International Union for the Conservation of Nature and Natural Resources, the International Biological Program, DIAND, and the University of Alberta, the conference was attended by scientists from the Soviet Union, four Scandinavian countries, Great Britain, the United States, and Canada. Several government departments sent representatives with an especially large group from the Canadian Wildlife Service including R.H. McKay and A.H. MacPherson. Shell Oil, Imperial Oil, Atlantic Richfield, British Petroleum all sent delegates. The purpose of the conference was to establish the state of knowledge of northern ecology with the express purpose of developing specific recommendations and resolutions for government and industry.[70]

A unique aspect of the conference was the special effort Fuller and Kevan made to include northern natives in the conference. Fuller wanted the natives to to observe the conference and learn about the effects of oil exploration on the land from which they earned their living. Inuit delegates gave first hand accounts of the effects of technology on their land. Inuit from Inuvik, Cambridge Bay, Tuktoyuktuk, Fort Smith, Sachs Harbour, and Coppermine attended the conference.[71]

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[68] Ibid., 22.

[69] Bothwell, Drummond, English, Politics, Power, Provincialism, 257.

[70] W. A. Fuller and P. G. Kevan (eds.) Productivity and Conservation in Northern Circumpolar Lands: Proceedings of a Conference at the University of Alberta 15 to 17 October 1969. (Morges, Switzerland: International Union for Conservation of Nature and Natural Resources, 1970) Giving papers were Fuller, William Pruitt, Max Dunbar, Larry Bliss, Frank Banfield, Jim Lotz, John Naysmith, and Andrew Thomson. Dick Passmore and James Woodford attended.

Jim Lotz expanded on his idea that the natives should have considerable say in the future of the North. He also suggested the novel idea that the government train Inuit to be conservationists for the land. He complained that "No Eskimo group has had so much attention and money lavished on them as have the whooping cranes." Lotz further attacked the idea that Eskimos should be trained to work in the industrial North as miners or oil workers.[72]

The most important event at the Tundra Conference was the passing of resolutions which followed the reading of papers. These resolutions represent a degree of unanimity amongst the scientists that had not previously manifested itself. This is especially significant in that several of the resolutions specifically criticized the federal government. One such resolution concerned the manner in which the government was proceeding with the drafting of its new Northern Land Use Regulations. The delegates were angry that the committee responsible for the drafting of the regulations had not included representatives of the ecology/preservation movement and that scientific expertise was not taken advantage of. They recommended that the proposed regulations be exposed to public scrutiny "by broadly circulating the proposed land-use regulations and by inviting written submissions and possibly public hearings."[73]

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[71] See testimony by Charlie Gruben. Appendix to IUCN conference.

[72] Jim Lotz, "Land Problems and People Problems - The Eskimo as Conservationist,"in Productivity and Conservation in Northern Circumpolar Lands, 276-283.

[73] "Resolution Respecting the Role of the Canadian Government in Circumpolar Regions of Canada," in Productivity and Conservation in Northern Circumpolar Lands, 326. Edgar Dosman details the

The Tundra Conference is significant in many ways. It was the first conference called by scientists to consider the state of the northern ecology and the effect that development was having on it. Further, the conference was called with the specific intention of trying to educate government about the damage development could cause. Equally significant it was the first attempt by scientists to bring native people in to their group. This was to become an increasingly important component of environmentalism. The presence of the oil industry was also positive. Ecologist Larry Bliss has said that the conference represented a turning point in instilling environmental values in government and industry. "If nothing else it at least enabled people with different philosophies and motivations to discover the views of others."[74]

The Tundra Conference was further evidence that William Fuller was emerging as a major force in the environmentalist cause. At the 1969 Alaska Science Conference, a conference marked by great dissension over oil exploration, Fuller had been one of the most outspoken critics of development. He again asked the question he asked at Mid-Canada, "should we use Arctic oil at all?" He answered his own question stating "Because of the fragility of the environment, we should not even *look* for hydrocarbons in certain parts of the globe."[75]

The impact of the Tundra conference was greatly increased by a two-part programme recorded by Fuller for CBC radio's Ideas programme. For that programme Fuller discussed "man's threatening presence in the delicately balanced ecology of the lands

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attempts of the Task Force on Northern Oil Development to exclude biologists from any committee and to frustrate the work of units that were considered "soft" on environmentalism. Dosman, The National Interest, 157-175.

[74] L.C. Bliss, "A Biologist Explains Why We Must Plan Now to Protect the Arctic," Science Forum 3, no. 3 (June 1970): 7.

[75] W.A. Fuller, "Ecological Impact of Arctic Development", Proceedings of the 20th Alaska Science Conference, University of Alaska, August 24-27, 1969. (College, Alaska: 1969).

around the North Pole" with participants from the Tundra conference.[76]

Shortly after the Tundra Conference Richard Passmore of the Canadian Wildlife Federation sent a statement to the Minister of Indian Affairs and Northern Development in which he proposed a moratorium on northern oil and mineral development to allow time for research to catch up. It would also, claimed Passmore, allow time to develop new techniques for exploration, test oil transport schemes, research the effect of oil spills, and develop and implement stand-by facilities to deal with oil spills.[77] While the resolutions passed at the Tundra Conference could easily be ignored by the government as representing the opinions of an elite of scientists, the CWF brief represented the beliefs of a large group of citizens. Passmore did not hesitate to point out to the government that the Canadian Wildlife Federation had two hundred thousand members at the time.

In response to the resolutions passed at the Tundra Conference and to the CWF brief the federal government invited several ecologists, including Richard Passmore; William Pruitt, then at the University of Manitoba; Gavin Henderson, executive director of the National and Provincial Parks Association; John Lammers of the Yukon Conservation Society; Andrew Thompson, a professor of oil and gas law at UBC and a founding member of the Canadian Petroleum Law Foundation; and John Lambert, a botany professor from Carleton University to form a study group, with the impressive title of 'The Mackenzie Delta Task Force'. The Task Force was to consider the proposed regulations and advise on and propose new ideas for a revised set of regulations. [78]

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[76] W. A. Fuller, Man on the Tundra [sound recording] (Ottawa: CBC, 1970) Recorded at the Conference on Conservation and Productivity in Northern Circumpolar Lands held at the University of Alberta, Oct., 1969. Originally broadcast on Ideas. Availiable on 2 cassettes from CBC learning systems: nos. 451-452.

[77] R.C. Passmore. Crisis in the North. (Ottawa: Canadian Wildlife Federation, 1970).

[78] William O. Pruitt, Jr., "Tundra Animals: What is Their Future?" Transactions of the Royal Society of Canada Series IV, Volume VIII (1970): 382 -384.

The ecologists accepted the invitation but quickly became frustrated by the government's seemingly dismissive attitude towards them and their ideas. When the government sent the task force North for a 'winter research trip' it was in early May, after the winter exploration season had ended. When the Task Force subsequently requested a month long summer trip they were granted three days at the end of July 1970. Further angering the members was that due to a lack of air transport they "couldn't even get to see the places we wanted to see."[79]

Despite the troubles they encountered, the Task Force proposed a set of regulations which they believed "allowed multiple use of all resources in the North, yet prevented the fragile, renewable resources from being destroyed in the process of extracting the non-renewable resources."[80] The proposed regulations dealt with such issues as maximum ground pressure of vehicles, removal of trash, sharing of information, prohibition of the use of wildlife by oil workers, and the treatment of wildlife. According to Pruitt the proposals met "delay after delay after delay and successive mutilations of the regulations and stipulations have brought us into the 1970 exploration field season with the tundra again unprotected." For Pruitt and others it was the last straw, "the time has passed to consider the problem as something to be worked out in the future. The situation is now one of crisis. We must have immediate public action."[81] The university members felt that they had had no impact on the government whatsoever, one participant said of trying to shape policy by working with the government, "I am disgusted with the whole futile exercise."[82] When Oilweek magazine reported that the Northern Land Use Regulations had been approved by conservation representatives the group angrily wrote to the magazine stating that they had not approved the regulations and were "expressly on record with the Department as reserving our approval."[83]

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[79] See comments by Richard Passmore in "Citizens and the Law North of '60," in Doug Pimlott, Kitson M. Vincent, Christine E. McKnight (eds.), Arctic Alternatives: A National Workshop on People, Resources, and the Environement North of '60 at Carleton University, Ottawa May 24-26, 1972 in Cooperation with Arctic Institute of North America. (Ottawa: Canadian Arctic Resources Committee, 1973), 371.

[80] Pruitt, "Tundra Animals,", 382.

[81] Ibid., 384.

The government was well aware of the dangers that oil exploration posed to the Arctic and, by 1970, they were making public statements which environmentalists found difficult to fault. Prime Minister Trudeau appeared on the CBC television show The Nation's Business in April 1970 to discuss the Arctic Waters Pollution Prevention Act. Trudeau's statements revealed a sound knowledge of the dangers of oil in the Arctic waters and its negative impact on the health of animals, birds, and native people.[84] Similarly the government's "Policy for Northern Development 1971-81" contained objectives and priorities that appeared to indicate a dedication to protecting the arctic environment. Nevertheless ecologists remained sceptical about the federal government's dedication to protecting the northern environment. Many felt that the Arctic Waters Pollution Prevention Act had much less to do with protecting the environment than it did with asserting sovereignty over the Northwest Passage, which was being tested by the voyage of the oil tanker *Manhattan.*

The voyage of the *Manhattan* through the Northwest Passage in 1969, while alarming nationalists for their own reasons, caused great worry amongst ecologists. The Manhattan, at 115 000 tons deadweight, was the largest ship in the American merchant marine. During its voyage the Manhattan suffered two sizable holes to its hull, even though it sailed in one of the lowest ice months and at a time when ice conditions where at a fifty-year low. Despite the damage to the ship's hull, Humble Oil decided to go ahead with even larger ships.[85]

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[82] Robert D. Franson, Alistair R. Lucas, and A.R. Thompson, "Legal Problems in the Canadian North," Arctic Alternatives, 320, footnote 16.

[83] A.R. Thompson et al. "Reservations re Conservation" Oilweek (May 18, 1970).

[84] "Why Mr. Trudeau Acted on the Arctic," Science Forum 3, no. 3. (June 1970): 8.

The possibility of a shipping accident in the Arctic was one that greatly worried many scientists. R.E. Warner of Memorial University in Newfoundland reported to the Canadian Wildlife Service that the damaging of just one tanker in the Arctic would have "catastrophic effects" on the environment. Warner made it quite clear that, given the record of the oil and shipping industry, it was a case of *when* a spill occurred not *if*. Warner documented the thousands of birds killed in Alaska due to drilling off Cook Inlet. He went on to observe that the government, by investing heavily in Panarctic Oils, had placed itself in an awkward situation. It was simultaneously trying to explore for oil while it was supposed to be regulating oil exploration. [86]

The fears of ecologists about a shipping disaster were given new fuel when, in February 1969, the Liberian tanker Arrow ran aground off of Chedabucto Bay in Nova Scotia. The Arrow released its cargo of nine million liters of oil seriously polluting over three hundred kilometers of Cape Breton shoreline. The federal government quickly appointed a task force, headed by Patrick McTaggart-Cowan, the founding president of Simon Fraser University, executive-director of the Science Council of Canada in 1968, and brother of Ian McTaggart-Cowan, to deal with the pollution and to recommended steps to prevent it from happening again.[87]

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[85] L. C. Bliss, "Oil and the Ecology of the Arctic,", 369; L.C. Bliss, "A Biologist Explains", 5. On the nationalist side of the Manhattan incident see Edgar J. Dosman, "The Northern Sovereignty Crisis, 1968-70" in Edgar Dosman (ed.), The Arctic in Question, 35-57.

[86] R.E. Warner, Environmental Effects of Oil Pollution in Canada: An Evaluation of Problems and Research Needs. (Ottawa: Canadian Wildlife Service, 1969).

[87] P.D. McTaggart-Cowan et al. Operation Oil: Report of the Task Force to the Minister of Transport, (Ottawa: Ministry of Transport, 1970).

In a December 1970 Science Forum article P.D. McTaggart-Cowan wrote about his experiences cleaning up the oil from the Arrow. He emphasised that the Arrow was really a very small ship of only 18 000 tons deadweight. In 1969 orders were being placed with shipyards for tankers of over 370 000 tons deadweight. According to McTaggart-Cowan the main problem was that marine law was extremely archaic and there was no legal convention binding shipping nations. The result of this was that the world's tanker fleets had an incredibly bad accident record. In the second half of 1969 there were oil tanker losses of over 600 000 tons or, as McTaggart-Cowan put it, "the equivalent of 33 ships the size of the Arrow in 26 weeks."[88]

McTaggart-Cowan made numerous recommendations about how to deal with oil spills and, more importantly, how to prevent them. He stressed the danger to the northern environment if oil was to get into icy waters saying that scientists had little if any idea how oil would effect it. Finally he emphasized to the federal government that the scientific community had showed no hesitancy in providing the information necessary to undertake the clean up operation or in cooperating with the commissioners. McTaggart-Cowan claimed that their cooperation demonstrated "beyond a shadow of a doubt that the scientific community, when the chips are down, reacts as fast as or faster than anyone else to a call for help."[89]

As the 1970s began, and scientists discovered more and more evidence suggesting the imminent destruction of the northern environment, they waited with increasing impatience for the call for help to come. When the call did not come they became increasingly vocal in their protests, both in terms of published warnings and direct action.

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[88] P.D. McTaggart-Cowan, "Oil Tankers and Pollution of the Oceans: Stupidity is No Excuse," Science Forum 3, no. 6 (December 1970): 10-14.

[89] Ibid., 14.

CHAPTER THREE

Direct Action

As the 1970s began there was increasing global awareness of the damage that was being done to the earth. Pollution, it seemed, was everywhere. In northern Ontario people were found to have mercury poisoning from fish they had eaten; Lake Erie had become so clogged with algae that birds often seemed to be standing on the water. In 1970 the radical environmental group Greenpeace was established in Vancouver to protest the U.S. Atomic Energy Commission's testing of nuclear weapons in the Aleutian Islands. As a result of the increasing evidence of environmental damage a growing segment of the Canadian public were receptive to new ideas about such issues as pollution, the need to protect parks, and the dangers of atomic testing. The time was ripe for a public debate over the northern environment.[1]

While the issue of protecting the northern environment had gained wide acceptance amongst the northern research community, it had not yet captured the public imagination. There was widespread discussion amongst scientists about this problem, and the first efforts at public education through the mass media were being made. One problem was that much of the general public viewed the North as a vast wilderness that no amount of development could even begin to damage. Furthermore many people believed that pollution problems closer to home were more important than any problem in the far off Arctic. Because there had not been any spectacular examples of environmental degradation in the

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[1] Examples of pollution in Canada are described in Ross Howard, Poisons in Public: Case Studies of Environmental Pollution in Canada. (Toronto: J. Lorimer, 1980).

North the media had paid little attention to it.

This all changed in 1970 when the public's attention was focused on the issue of the northern environment by newly formed Native rights groups, by the debate over the Trans-Alaska Pipeline in the United States, and especially by the application of a number of companies to build a gas pipeline up the Mackenzie Valley.

In late 1970 the federal government's credibility as protector of the northern environment and its people was seriously damaged by a conflict between the Inuit trappers of Sachs Harbour and several oil companies. Sachs Harbour, which lays 320 nautical miles from Inuvik, was home to approximately one hundred Inuit who had been remarkably successful in establishing themselves as a largely self-sufficient community with an economy based almost entirely on fur trapping. Although the profitability of fur had declined greatly following the Second World War, Sachs Harbour had managed to adapt and had become one of the most productive fur trapping areas in North America.[2]

Oil exploration came to Banks Island in June 1970 when oil company workers arrived in Sachs Harbour to inform the residents that they would shortly begin a mammoth five million dollar exploration programme. The residents of Sachs Harbour were caught totally unawares by the arrival of the oil men. Unbeknownst to them DIAND officials had granted oil exploration permits for over sixteen million acres of Banks Island to a consortium of Elf Oil Exploration, Deminex, Panarctic Oils, Amaco and twenty smaller companies. Equally surprised were the oil companies who were unaware that the Natives had long held hunting and trapping rights for most of the Island.[3]

At the first meeting between the oilmen and the citizens of Sach's Harbour, the trappers raised concerns about the nature of the exploration and its possible effect on their trapping and hunting. This was a subject in which they could claim a certain level of knowledge as one of the trappers had been in attendance at the Tundra Conference at University of Alberta in 1969.[4] The oil company officials assured them that exploration would not effect trapping. In subsequent meetings, with DIAND officials, the Bankslanders were assured that the government would ensure that no damage was done to the northern environment. Because the federal government had authorized the oil companies to explore for oil without having any real knowledge of the potential effect on the ecology they appeared to be allied with the oil companies.[5]

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[2] Peter Usher, The Bankslanders: Economy and Ecology of a Frontier Trapping Community. (3 vols) (Ottawa: Queen's Printer, 1970) 1: 17.

[3] Ibid., 3: 38-41.

Unfortunately for the government Peter Usher, a geographer working for the Northern Coordination Research Centre, was working on a full scale study of the "ecological, economic and social basis of trapping" on Banks Island at the very time the conflict between the trappers and oil companies began. Usher's report, the bulk of which was complete before the oil companies arrived on Banks Island, included a history of fur trapping in the western arctic, the economics of fur trading, its social aspects, and the impact of white society on Banks Island.[6] In his report Usher concluded that, in the case of Sach's Harbour, the hunting and trapping economy was stable and viable and the needs of Banks Islanders would be best served by maintaining, encouraging, and developing the fur trapping industry. This recommendation was in sharp contrast to the dominant departmental view that the only solution to Native problems was to integrate them into industrial development .[7]

When the oil companies arrived to begin exploration Usher decided to conduct a study of the effect of oil exploration on trapping and the role of the federal government in promoting oil exploration. In his section on oil and trapping he explained how some of the unavoidable effects of oil exploration, which includes much seismic work and blasting, are high noise, diesel fumes, and massive alteration of the landscape which could result in animals being driven away from their habitat, affect their denning and reproduction, affect migration patterns, and potentially cause illnesses from garbage and fuel dumps.[8]

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[4] Ibid., 3: 47.

[5] Ibid., 3: 42-43.

[6] Ibid., 1: 1.

[7] Ibid., 1: 40.

The report included a detailed account of negotiations between the Natives, government, and industry which portrayed the government in an extremely negative light. Usher severely criticized government officials for claiming that exploration could be achieved without damage to the environment as there was "very little scientific information on which to base such statements."[9] In one particularly damning statement Usher wrote,

> The evidence of man's ability to destroy his environment unwittingly needs no elaboration. In effect the Bankslanders were fighting for a fundamental principle of resource development. If the consequences of development are unknown, they should be determined as far as possible before deciding whether to proceed with such development. In the view of many people today, this is a principle so correct, especially where large scale and irreparable damage may occur, that there can be no excuse for departing from it. This view was clearly not shared by the Department of Indian Affairs, since it saw fit to allow exploration to proceed in the absence of any knowledge of the consequences. [10]

Usher went on to state that oil exploration would lower the standard of living and quality of life for the Bankslanders as well as possibly damaging the environment. This, Usher argued, was in contradiction to the government's own stated goals for northern development which were to improve the life of the Natives while protecting the environment. He concluded that DIAND could no longer serve the interests of both northern development and the Native people and for it to continue to do so was "to perpetuate a fraud on northerners and all other Canadians"[11]

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[8] Ibid., 3: 46-47.

[9] Ibid., 3: 48.

[10] Ibid., 3: 49

The government response to Usher's report was one of anger. Jean Chrétien, then Minister of Indian Affairs and Northern Development, was furious about the report calling it "stupid" and "a shabby piece of research".[12] Usher was forbidden to travel or to go North and was advised not to speak to anyone about his report. In 1973 Usher resigned from the NSRG and took a position with the newly formed Committee for Original People's Entitlement (COPE), an Inuit rights group.

The impact of Usher's work and the ensuing controversy was immediate and enormous. Here was ample evidence to support all of the suspicions of ecologists about government antipathy towards traditional Native life and the northern ecology. The Bankslanders became a rallying cry for northern environmentalists and a symbol of the government's complicity with the big oil companies. One of the most important results of the controversy surrounding Bankslanders was the linking of the ideas of protecting the environment and safeguarding the Native people's rights to live as they chose. Usher's claim that the Inuit should have the right to choose their way of life was the most developed, and certainly most public, statement of its kind to date.

In 1969 Native Canadians began to organize politically. Between 1969 and 1971 three major groups were organized; the Indian Brotherhood of the Northwest Territories was formed under James Wah-Shee in 1969, the Committee for Original People's Entitlement was founded in January 1970 representing the Inuit of the Western Arctic

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[11] Ibid., 3: 61.

[12] The Globe and Mail, (March 16, 1972); See also Jim Lotz, "What Does Government Want From Social Scientists?" Science Forum 6, no. 4 (August 1973): 21.

(Inuvialuit), the Inuit Tapirisat of Canada, representing all Inuit, was formed with Tagak Curley as its first president in 1971. There are three factors which account for the organization of Native groups at this time. First, the suggestion by the government in its June 1969 White Paper that special status for Native people be abolished was met with anger by many Natives. Secondly, the groups realized that they would have to organize if they wanted to have any input into plans for the industrial development of the North. Third, DIAND began offering funding to groups interested in working towards Native self-government. [13]

The public dispute between Usher and the government was the most dramatic evidence yet that many government scientists were coming to the conclusion that the government was not committed to the protection of the North or its people. One reason for the anger at the government was that government employees were legally prevented from sharing their research material with other scientists. Canadian Wildlife Service research for example was considered to be "internal, privileged documents" for the use of DIAND only.[14] Despite this several key Canadian Wildlife Service officials made public statements. Dalton Muir, the single member of a proposed twelve member arctic ecology unit of the Canadian Wildlife Service, reported that his monitoring of northern oil exploration had shown subsidiary damage from such exploration to be ten to one hundred times greater than expected and added "the future of whole islands is at stake."[15] W.E. Stevens, also of the Canadian Wildlife Service, wrote in July 1971 that "Hardly anyone...yet grasps the scope of what is happening in the North or the enormity of the consequences of accidents or bad management."[16]

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[13] Mark O. Dickerson, Whose North?: Political Change, Political Development, and Self-Government in the Northwest Territories. (Vancouver: University of British Columbia Press, 1992), 105-109.

[14] James K. Woodford. The Violated Vision: The Rape of Canada's North. (Toronto: McClelland and Stewart, 1972), 129.

[15] Ottawa Journal, December 24, 1970. Quoted in Arctic Alternatives, 48.

In 1971 several books on the subject of northern development and protecting the northern environment were published. These books aimed to synthesize the research that had been done in the previous decade. The new ideas about wilderness had appeared for several years but many had been in obscure venues. These new books were intended to render new ideas about ecology and preservation accessible to the non-specialist and to the general public.

Max Dunbar, encouraged by the very positive response to Rape of the Environment, published a re-working of the brief for the general reader. A comment in the Preface to Dunbar's book illustrates just how little impact the ideas that zoologists had been proposing throughout the sixties had had on the Canadian public and on the media.

> One Canadian newspaper expressed surprise that zoologists should be concerned with pollution at all; the implication was that pollution was the business only of the chemical engineer and the local administration. Nothing could better illustrate the gap between the scientist and the public; indeed one wonders how far back towards the most elementary principles one should go in bringing the problems of pollution to public notice.[17]

Dunbar's book outlined the damage that industrial development was causing to the Canadian environment in separate chapters devoted to the North, the Sea, the Air, Rivers and Lakes, and Forest, Field and Mountains.

About the North Dunbar commented,

> We have been caught in a state of scientific near-nudity in the particular respect in which we now so urgently need

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[16] W. E. Stevens, "Problems of Development in Northern Canada," in Conservation Council of Ontario, The Bulletin 18, no. 3 (July 1971): 4-7.

[17] Max Dunbar, Environment and Good Sense: An Introduction to Environmental Damage and Control in Canada. (Kingston and Montreal: McGill-Queen's 1971) .

> protective covering: namely, what the proposed developments will do to the environment, in precise terms, and knowledge of what should be done to conserve and to protect.[18]

Dunbar spent considerable time restating Passmore's demand that a moratorium on northern development be imposed. He quoted at length from both the CWF brief and from R.E.Warner's Canadian Wildlife Service report on the danger of oil to the marine environment.

In 1972 James Woodford published an account of the destruction of the North by developers. Part condemnation of the government, part ecology primer, and part call to action, The Violated Vision was the most ambitious attempt yet by a biologist to connect with the general public. Woodford's book was an effort to demonstrate how the efforts of ecologists were being ignored by the federal government.[19] As editor of Ontario Naturalist magazine from September 1965 to September 1969 Woodford had been in close contact with many of the leading proponents of the northern protection movement. In several places Woodford used unpublished manuscripts and reports, transcripts of conversations with scientists, and his notes from the 1969 Tundra Conference. Woodford presented a highly readable synthesis of the ideas and findings of many ecologists including Pimlott, Passmore, Pruitt, Dunbar, Bliss, Clarke, and McTaggart-Cowan, rendering many of their more complex ideas accessible to the non-scientific reader.

In his efforts to alarm the public Woodford used two of the most effective symbols of environmental degradation - DDT and radioactivity. He reported on how DDT had been found in the flesh of polar bears and peregrine falcons and on how radioactive material was present in the caribou and Inuit. Further adding to the picture was a tale of how arsenic from mining was found in lichen and how there was a twenty mile "dead zone" around Yellowknife.[20]

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[18] Ibid., 53.

[19] See reviews of Woodford's book in the July and September 1972 issue of Nature Canada, 2-3.

Woodford strongly called for a "Royal Commission, a Parliamentary Committee or a special task force" to ask questions about such issues as why were so few Natives benefiting from development, why no ecological studies were being done, to inquire whether there existed sufficient technology to deal with an accident, to determine if the government should be in the oil and gas field in the first place and to decide if it was able to regulate itself ecologically.[21] In the conclusion to his book Woodford strongly restated the idea of a moratorium on development.

The Violated Vision found favour amongst both the public and the scientific community. It was, perhaps inevitably, warmly reviewed in Nature Canada and Doug Pimlott regarded it as an important step in furthering the participation of the people in northern affairs.[22] Woodford's book, like Usher's report, would be cited continuously in the years to come.

The Arctic Institute of North America initiated the Arctic Development and Environment Programme in 1971 under the directorship of ecologist Max Britton. Eric Gourdeau and John C. Reed were also members of the programme and were in charge of 'human aspects' and 'resources' respectively. The programme had the dual purpose of encouraging resource development in the Arctic while paying "full attention to the best interests of the people of the United States and Canada, including specifically the interests of the indigenous people of the northern regions, and with dedication to the preservation of the natural environments." The dual purpose of the programme illustrates that a great many of the Institute's members were not willing to give up its developmentalist origins. While prominent members such as Fuller, Dunbar, and Clarke were increasingly vocal in their questioning of development, a significant number supported industrial development of the North. This was one of the reasons that the AINA was not used as a political organization by its members.

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[20] Woodford, The Violated Vision, 60.

[21] Ibid, 17.

[22] Doug Pimlott, "Opinion," Nature Canada 1, no. 3 (July-September 1972): 2-3.

An important role of the ADE programme was to present to the public the diversity of opinion which existed with respect to resource development. In selecting Reed, Gourdeau, and Britton to run the programme the Arctic Institute had consciously chosen scientists with "different backgrounds, experiences, interests, biases and orientation toward resource development and the environment" because these differences "also divide the public at large".[23] In January 1971 the Arctic Institute released a monograph by Gourdeau, Britton, and Reed in which they presented their views on various aspects of development. Reed represented the beliefs of the developer, Britton those of the ecologist, and Gourdeau discussed the effects of development on the Native population. In March 1971 Britton and Reed collaborated on a Commentary in Arctic which succinctly laid out the arguments for and against an arctic pipeline.[24]

In 1971 the Science Council of Canada sponsored a study on fisheries and wildlife resources. In that report Doug Pimlott, C. J. Kerswill, and J. R. Bider presented wildlife not as a natural resource but as a 'social asset' with several values such as recreational, therapeutic, artistic, educational and ecological. Examples of ecological values include wildlife as indicators of pollution (mercury, PCBs, radiation) as measures of resilience of northern ecosystems, as genetic material of potential importance to man, as attraction in parks, and as food for northern residents.[25]

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[23] Eric Gourdeau, M.E. Britton, and John C. Reed, The Arctic Dilemma: Man and His Environment Vs. Resource Development. (Washington and Montreal: Arctic Institute of North America, 1971).

[24] John C. Reed and M.E. Britton, "Time of Decision," Arctic 24, no. 1 (March 1971): 3-8.

In their report Pimlott, Kerswill, and Bider took the opportunity to reiterate the themes that had been raised at the Resources for Tomorrow conference in 1961. They described the Resources for Tomorrow papers as being highly valuable and "although written nine years earlier, they contained much that was timely. The summaries of the discussions at the conference also helped us to gain focus quickly after we began our work, because they brought principal areas of interest or concern immediately to mind."[26]

They noted with regret, however, that so few of the management recommendations made at Resources for Tomorrow had been implemented. In several areas no real efforts had been made to effect changes suggested at the Resources for Tomorrow conference. Of ten proposals to increase the amount of information and education programs only one of these had been undertaken by 1970 - and it was done by the Canadian Wildlife Federation, a citizen's organization.

Pimlott, Kerswill, and Bider viewed themselves as representatives of the community of fishery and wildlife scientists and often quoted lengthy passages from those they considered to be "the most profound creative idealistic and practical minds that exist in the the twin disciplines [fishery and wildlife science] today". They included extended extracts from the writings of J.B. Falls, C.H.D. Clarke, and Max Dunbar.

Amongst the recommendations of the report were that the government enact a Canada Wildlife Act which would allow the government to pass and enforce regulations protecting wildlife. This had been proposed and unanimously approved at Resources for Tomorrow. They further recommended that a Ministry of Renewable Natural Resources be established with cabinet level representation.They strongly criticized the Northwest Territories council for "routinely ignoring" Canadian Wildlife Service management recommendations. In an effort to find out the depth of the problem they requested DIAND documents but were refused.[27]

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[25] Pimlott, Kerswill, Bider, Background Study for the Science Council of Canada: Scientific Activities in Fisheries and Wildlife Resources (Ottawa: Information Canada, 1971)

[26] Ibid, 14-15.

The Pimlott report built on a 1970 Science Council report on Fish and Wildlife Research in Canada which had recommended the establishment of an Environmental Council of Canada which would operate in a similar fashion to the Economic Council of Canada which had been established in 1963.[28] This body would be an independent crown corporation reporting directly to the Prime Minister and would be entirely independent of the government. It would maintain its own staff as well as publishing independent reports.

In 1971 the Canadian Audubon Society and numerous other groups joined forces to found the Canadian Nature Federation, a national organization representing provincial naturalists federations, local societies, and individuals. It formed a powerful collective which was able to bring more influence to bear on the government. Doug Pimlott was elected president and Ted Mosquin was the executive director. Pimlott believed that the creation of the federation would facilitate "mechanisms within the federation, interrelationships with other organizations and a rapport with other members of the professional community that will permit us to go to governments and to the public and to state the case on areas which concern us long before they become crises."[29]

The Canadian Nature Federation began publishing a glossy new quarterly Nature Canada to replace the somewhat staid Canadian Audubon. Pimlott and Mosquin shifted the emphasis of the journal away from more traditional natural history and focused on environmental problems; the journal contained regular sections about how citizens were getting involved in policy making, technology and nature as well as articles that would provide "authoritative, analytical, and interpretive writing to help Canadians understand the the important environmental concerns of the day."[30]

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[27] Ibid., 69, note 3.

[28] Science Council of Canada, Report on Fish and Wildlife Research in Canada, (Ottawa: Information Canada, 1970).

[29] Doug Pimlott, "A Statement from the President," Nature Canada 1, no. 1 (January/March 1972): 2.

Nature Canada quickly became an important forum for discussion of wilderness protection and devoted considerable space to the Arctic environment. Many important new ideas and concerns were raised in its pages such as one of the earliest indictments of Hydro-Québec's James Bay project and the first public concerns about the Dempster Highway. In an article on the highway Frank Banfield claimed that the amount of attention environmental groups were paying to the oil industry was enormous compared to the consideration that was being paid to the building of the Dempster Highway by the Canadian government.[31] Banfield's point was important. Industry was expected to do a great deal of research while the government was proceeding on the highway, a potentially devastating project, without any ecological research work whatsoever.

In forming the Canadian Nature Federation Pimlott and the others achieved two related, yet slightly different, goals. First, by unifying the provincial organizations and the numerous smaller groups from around the country, such as the Ottawa Field-Naturalists and the Alberta Wilderness Association, they created a large, well organized constituency that was sympathetic to environmental affairs. Although some of the members of the groups had probably never before considered themselves 'environmentalists', they now found themselves as members of a large national environmentalist organization. This large audience was receptive to the ideas that Pimlott and others would be sending out and would hopefully take action on their own. The second purpose achieved by the creation of the Canadian Nature Federation was that it demonstrated to the government that wilderness ideals were the views of a great many 'ordinary' Canadians and not just those of elite academics. This allowed the scientists to claim to be representing a broadly based citizen's group and was of great political value.

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[30] Valanne Glooschenko, "The James Bay Power Proposal" Nature Canada 1, no. 1, (January/March 1972): 5-10.; "The Federal Scene,", 34.

[31] A.W.F. Banfield, "Northern Ecology, Pipelines, and Highways," Nature Canada 1, no. 2, (April/June 1972): 14-16. See also Frank Banfield "Do Highways Menace Northern Wildlife?" The Globe and Mail, (20 May 1972).

The Pipeline Debate

In February 1969 the Trans-Alaska Pipeline System, a loose consortium of American oil companies, announced its intention to build a hot oil pipeline from Prudhoe Bay to the port of Valdez.[32] Although the the TAPS consortium had also examined the feasibility of an alternate route up the Mackenzie Valley they decided in favour of the American route. This pleased the United States government who had also considered the Canadian route but rejected it for several reasons, primarily because it would take twice as long to build and because it would be under the control of a foreign government.[33]

Almost immediately the pipeline proposal ran into opposition from a group of Alaskan Natives and American environmentalist groups such as the Sierra Club, the Wilderness Society, Friends of the Earth, and the Environmental Defense Fund. Interestingly the environmentalists and the Natives did not align themselves; the Natives were interested in their right to own the land while the environmentalists were concerned with preserving the wilderness.[34] As it became apparent that the TAPS consortium had not done its homework with respect to the engineering of the pipeline the opposition grew.

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[32] My understanding of the Trans-Alaska Pipeline controversy is derived from Peter Coates, Trans Alaska Pipeline Controversy, particularly Chapters 7 and 8, but see also Mary C. Berry, The Alaska Pipeline: The Politics of Oil and Native Land Claims. (Bloomington: Indiana University Press, 1975).

[33] P. Coates, Trans-Alaska Pipeline Controversy, 196.

[34] Ibid., 190.

The American environmental groups formed an umbrella organization called the Alaska Public Interest Coalition (APIC) in early 1971. APIC was a somewhat unlikely conglomeration of the Sierra Club, the Wilderness Society, Zero Population Growth, Friends of the Earth, Trout Unlimited, the National Wildlife Federation, the National Rife Association, Common Cause, the Consumer Federation of America, and, perhaps most surprisingly, the United Auto Workers of America. APIC could legitimately claim to speak for millions of Americans.[35]

When hearings in February 1971 demonstrated the depth of opposition to the Trans-Alaska Pipeline the Canadian government began lobbying the United States government to consider the Mackenzie Valley route. The Canadian government claimed that its objections to the Alaska route were based on concerns that tanker traffic down the British Columbia coast could damage the marine environment. To many observers the government seemed to be acting with unseemly haste; pushing the Mackenzie Valley route without knowing the potential effects construction would have on the environment. Both The Globe and Mail and the Toronto Star editorialized that the Mackenzie Valley Pipeline seemed to be a rush job. The Globe and Mail, in particular, was critical saying "it is apparent that the Cabinet will do anything to persuade U.S. oil interests to take its pipeline down the Mackenzie Valley."[36]

One reason the government appeared to be acting with such haste may have been that they did not believe there would be any opposition to the plan. According to Edgar Dosman, American government and oil industry executives began warning Ottawa in 1969 about the potential for opposition to a Canadian pipeline, but the government did not believe Canadian groups were sufficiently organized.[37] This belief would soon prove to be deeply flawed.

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[35] Ibid., 217-225.

[36] The Globe and Mail March 16 and 23; The Toronto Star March 17, 1971

The federal government's efforts to interest the TAPS consortium in a Canadian pipeline route caused outrage amongst the Canadian northern research community. Doug Pimlott, who feared that a desire to protect the British Columbia coast could result in the destruction of the Mackenzie Valley, "made several phone calls and found that I was not alone with my fears."[38] His calls were placed to 'old friends' such as William Fuller, Richard Passmore, Ian McTaggart-Cowan, Donald Chant and Maxwell Cohen.[39] These individuals formed the core of what would become the Canadian Arctic Resources Committee (CARC).

The scientists were concerned about four specific problems. First, changes to the Northern Land Use Regulations had rendered the regulations almost completely ineffective for controlling oil exploration activities. Second, a government research project, the Arctic Land Use Research Programme, did not appear to be achieving its goal of generating the necessary social and ecological information on which to base large scale industrial development. Third, neither the Canadian Wildlife Service nor the Fisheries Research Board had been asked to conduct any research on the possible effects of a Mackenzie Valley pipeline. Finally, the responsibility for protection of the northern environment was to be placed under the Northern Economic Development Branch of Indian Affairs and Northern Development and not the Department of the Environment. Pimlott, Dunbar, and the others decided that there was a need for a new citizen's organization,

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[37] Dosman, The National Interest, 157.

[38] Doug Pimlott, "People and the North: Motivations, Objectives, and Approaches of the Canadian Arctic Resources Committee," in Arctic Alternatives, 5.

[39] A brief but valuable account of the founding of Pollution Probe and CARC appears in Page, Northern Development, 35-40.

> ...to ensure that the things that needed to be done in advance of development of whatever type, got done; which could help to bring to the surface the question of what was to be done about the claims of Native people; and which could help to overcome the barrier to factual information existing between the Canadian public and the Government on matters that pertained to development, the Native people and the environment.[40]

From the beginning the goal was to form an organization that would be an 'honest broker' of knowledge and data; it would not be a "club for environmental zealots."

> ...it is intended that CARC will perform a functional service for the Canadian public, industry and government while avoiding the emotional and sometimes irrational overtones which have clouded some ecological issues in the past.[41]

The members of CARC viewed themselves as the third point in a triangle, breaking up the straight line relationship that had previously existed between industry and government. This was an idea that first gained attention in Usher's Bankslanders. The CARC aimed to encourage discussion of northern development before it occurred and not after as had been the case with the Bennett dam. "We were almost obsessed with the idea of trying to head off problems before they occurred."[42]

By April 1971 the CARC had fifteen members including William Fuller, Ian McTaggart-Cowan, Donald Chant, Ken Hare, Roderick Haig-Brown, Max Dunbar, Richard Passmore, Trevor Lloyd, Pierre Dansereau, Doug Pimlott, Ramsay Cook, Eric Molson, Albert Hochbaum, and Maxwell Cohen. The addition of the four non-scientists - Cook, Molson, Hochbaum, and Cohen - was almost certainly an attempt to broaden the scope of the organization in order to protect against the accusations of 'zealotry' which Pimlott feared. More importantly CARC was fulfilling one of the requirements of a successful pressure group, expertise in all areas. In the following months CARC continued to expand its membership, enlisting the aid of prominent lawyers, economists, Native people, and businesspeople.

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[40] Pimlott, "People and the North," in Arctic Alternatives, 8.

[41] Ibid, 9.

[42] Ibid, 9.

Maxwell Cohen, as Dean of Law at McGill University and Chair of the International Joint Commission, brought a wealth of legal expertise to the group. Although CARC desired to work with government and industry, early encounters led them to believe that they might need to resort to legal tactics to protect the North.

Ramsay Cook, a historian at York University, was interested in the nature of technological progress. His motivation for joining the CARC can be found in a 1971 essay in which he states "it is the prospect of 'Ecological Armageddon' that is our most pressing current problem."Cook believed, however, that "the evidence suggests some small reason for accepting the view that technological change need not determine political decisions, but rather that political decisions can direct and limit technological development." [43]

Roderick Haig-Brown was the Chancellor of the University of Victoria during his time on the CARC. He was also one of Canada's most respected nature writers. He is best known for his philosophical treatises on flyfishing, such as the classic The Western Angler, in which he dealt in depth with issues of public ownership of the land and the government's responsibility to protect it.

> A government can employ good scientists and initiate research work; it can think in terms of decades rather than in terms of seasons, in terms of whole watersheds rather than in terms of little stretches of water here and there. It can (or should be able to) legislate according to the advice of its scientists and it has the means to enforce its legislation.[44]

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[43] Ramsay Cook, "Loyalism, Technology, and Canada's Fate," in Ramsay Cook, The Maple Leaf Forever: Essays on Nationalism and Politics in Canada: 2nd ed. (Toronto: Macmillan of Canada, 1977), 65.

[44] Roderick Haig-Brown, The Western Angler. (Toronto: Collins, 1939) rprt. 1968., 7.

While Haig-Brown offered no solutions to the problems of destruction he did point out what might be. He had been a special consultant to the British Columbia Natural Resources Conference, a group of university, industry, and government representatives who sought to solve natural resource problems and to influence public policy. In 1961 he published The Living Land a summation of the ideas that had been developed by the conference over a twelve-year period. Haig-Brown's two introductory essays deal with the nature of development and outline a coherent conservation philosophy.[45]

After leaving the Université de Montréal in 1961 Pierre Dansereau had spent the next seven years at Columbia University in New York City and as director of the New York Botanical Garden. He returned to Canada at the end of the sixties taking up a post at Université de Québec à Montréal in 1971. His 1972 Massey lectures on Biogeography cemented his reputation as one of the world's preeminent ecologists.

On April 30, 1971 Pimlott, Fuller, Cohen, and Vincent met with Minister of Indian Affairs and Northern Development Jean Chrétien, Minister of Fisheries and Forestry Jack Davis, and Minister of Energy, Mines and Resources Joseph Greene to inform them of the formation of the Committee and to brief them on its beliefs and goals. They specifically requested the cooperation of both industry and government. This cooperation would involve both access to information on research programs and the right to consult with government scientists on all aspects of government involvement in research, development and enforcement programmes.[46]

By May 1972 an additional twelve members - Jameson Bond, Peter Cumming,

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[45] Anthony Robertson, Above Tide: Reflections on Roderick Haig-Brown. (Madeira Park, B.C.: Harbour Publishing, 1984.) ; Roderick Haig-Brown, The Living Land, (Toronto: Macmillan, 1961).

[46] See "Memorandum to Jean Chrétien, Jack Davis, and J. J. Greene," reprinted in Arctic Alternatives, 16.

Tagak Curley, Steele Curry, John Deutsch, John Fraser, William Harris, Phyllis Lambert, Peter Middleton, Andrew Thompson, James Wah-Shee, and Bob Williamson - had joined the committee.

The legal power of CARC was greatly strengthened by the addition of Thompson, Fraser, and Cumming. Thompson was a professor on the faculty of Law at the University of British Columbia and was a pioneer in the field of environmental law in Canada, having co-authored the standard work Canadian Oil and Gas. He was also the founder and director of the Canadian Petroleum Law Foundation and President of the Arctic International Wildlife Range Society.[47] Fraser was Chair of the B.C. sub-section on Environmental Law of the Canadian Bar Association and was co-chair of the Progressive Conservative Pollution Committee. Cumming, the Associate Dean of Osgoode Hall Law School, was an expert in Native rights.

Two of the new members, James Wah-Shee and Tagak Curley, linked the CARC much more closely to the growing Native rights movement. Curley was the first president of the Inuit Tapirisat while Wah-Shee was the president of the Indian Brotherhood of the Northwest Territories (later renamed the Dene Nation). Both were prominent Native politicians and could legitimately claim to speak for the two major Native groups who might be affected by a Mackenzie Valley Pipeline.

Economist John Deutsch, a former Liberal mandarin, provided tremendous contacts within the Liberal government. He had served as secretary of the Treasury Board and as the first chairman of the Economic Council of Canada from 1963 to 1967. While on the CARC he was the Principal and Vice-Chancellor of Queen's University.

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[47] See A.R. Thompson, "A Conservation Regime for the North," University of Toronto Law Journal 240 (1970): 20 for a succinct explanation of the development ethic as it was understood by members of CARC; See also A.R. Thompson and H. R. Eddy, Background Study for the Science Council of Canada: Jurisdictional Problems and Natural Resource Management in Canada, (Ottawa: Information Canada, 1971).

CARC also succeeded in strengthening their ties to the business community. Steele Curry, who conducted the fundraising campaign, was a Toronto stockbroker. Architect Phyllis Lambert, a pioneer in the conservation of historic buildings and a member of the Bronfman family, had was extremely well connected in the corporate world; she also donated personally to the Committee. William Harris was president of Harris & Partners stock brokerage and in 1973 became co-chairman of Dominion Securities. The businesspeople were remarkably successful at garnering support for the CARC and corporate donors included Brascan, Cadillac Development Corporation, Canada Permanent, Great West Life, Labbat's, Montreal Trust, Power Corporation, Royal Trust, Simpsons-Sears, and Imasco. Additional funding came from organizations in the United States such as the Sierra Club, the National Audubon Society, the Wilderness Society, and the Natural Resources Council of America.[48] Attempts to get funding from oil and pipeline companies met with no success.

By May 1972 the membership of CARC was a very impressive and powerful force. The new membership demonstrates that ecological issues were attracting the attention of an increasingly wide segment of society. In assembling a powerful coalition the CARC was able to present its ideas in a variety of forums to which it otherwise would not have had access. With its expanded legal expertise it was able to challenge the government and ensure that the Committee was receiving the full benefit of the law. The presence of the business representatives, and the corporate funding, lent the Committee an air of respectability amongst the Canadian Establishment. In addition to his knowledge of economics, and his connections within the Liberal party, John Deutsch was able to advise the Committee on the workings of the Economic Council of Canada. This was important in helping them to present their proposal for an Environmental Council. As powerful as the CARC would appear to be, Edgar Dosman has claimed that, as of 1973, "they remained identified with the radical fringe."[49]

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[48] "Donors to the Canadian Arctic Resources Committee," in Arctic Alternatives, 24.

As further evidence of the growing concern for the northern environment one can point to the interest of the Committee for an Independent Canada (CIC) in the pipeline issue. The CIC was established in September 1970 by Walter Gordon, Peter Newman, and Abraham Rotstein to promote the economic and cultural independence of Canada. With high profile members such as Jack McClelland, Claude Ryan, Mel Hurtig, Flora McDonald, and Pierre Berton the CIC was a potent lobbying force in Canadian politics. The relationship between the CIC and CARC will be detailed below.

CARC's planned role as an 'honest broker' or third point in a triangle between industry and business was one response to the threat of damage to the northern environment. It is important to remember, however, that the CARC was not established as an adversarial group, the members of CARC were eager to make their expertise available to government and industry. CARC wanted to to try and prevent damage to the northern environment and most of its members were willing to do anything to achieve that goal, including working with the oil and gas industry. Between 1970 and 1974 they were given that chance by Alberta Gas Trunk Line, a company eager to build a natural gas pipeline up the Mackenzie Valley.

In June 1970 Bob Blair, president of Alberta Gas Trunk Line of Calgary, announced his company's plan to construct one of the largest natural gas pipelines in the world up the Mackenzie Valley. Construction would begin in 1971 with completion scheduled for 1974. Blair announced that, as part of their planning AGTL had asked a group of well respected scientists to conduct an independent assessment of the environmental impact of the proposed pipeline. The Environment Protection Board, as the group was named, included Larry Bliss, Eric Gourdeau, Ian McTaggart Cowan, Max Britton and Carson Templeton, and engineer, who served as the chair. The group would be financed by Alberta Gas Trunk but would be allowed complete autonomy in its research and in its findings. Robert Page has noted that Blair's idealism and fairness were "just about unique in the North American oil and gas business... [and this] gave him greater credibility with environmentalists." [50]

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[49] Dosman, National Interest, 178.

The goal of the EPB, from the point of view of the scientists, was to attempt to "build environmental protection directly into the design from the start of the proposed project". In doing so the scientists who agreed to work on the EPB made a number of conscious assumptions. They assumed that Arctic Gas would act to protect the northern environment and, secondly, that the company would follow the EPB recommendations, "if the company did not act in this way then the Board's predictions would be invalid." This point was made to Arctic Gas repeatedly for "experience has shown that promises made at the start are often difficult to keep in the face of actual problems encountered in actual construction or operation of a project."[51]

By 1972 Gas Arctic (a new consortium including AGTL, the CNR, and several American utility companies) was forced by circumstances to merge with a rival pipeline applicant, a consortium of companies that included Atlantic-Richfield, Standard Oil, Exxon, and Trans-Canada. In all sixteen companies were involved in the new consortium. The increased Americanization of the group annoyed Bob Blair and, in 1974, he resigned, withdrawing AGTL from the consortium and forming a new company named Foothills Pipeline Company.[52] The gradual takeover of Arctic Gas by American interests and the subsequent resignation of Bob Blair would have important repercussions for the fate of the pipeline as will be shown below.

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[50] Page, Northern Development, 111.

[51] John Pepperell, "EPB - Sensible and Sound," Northern Perspectives 4, no. 2 (1976): 7.

The early reports of the Environment Protection Board on such matters as terrain, vegetation, fish, mammals, birds, and Native society were described as "ecologically sound, scholarly, unbiased, and 'conservationist' in tone, but consist[ing] mostly of generalities. It can only be described as 'vague' when it comes to specific safeguards for protecting Arctic ecosystems".[53]

The EPB was left autonomous until 1974 when Bob Blair left the Arctic Gas consortium; in November of that year Arctic Gas withdrew the EPB's funding. By that time, however, the EPB had managed to complete several detailed studies which they published in four volumes of analysis and recommendations.[54] EPB members went on to testify at both the Berger Inquiry and the National Energy Board hearings in 1977. The four volumes of EPB findings were used against Arctic Gas, who had paid for them, at both sets of hearings.[55]

In late May 1972 the Canadian Arctic Resources Committee, in co-operation with the Arctic Institute's ADE programme, organized its first major public conference. The National Workshop on People, Resources and the Environment North of '60 was held at

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[52] Page, Northern Development, 75-85.

[53] John B. Sprague, "Aquatic Resources in the Canadian North: Knowledge, Dangers, and Research Needs," in Arctic Alternatives, 169.

[54] Environment Protection Board. Towards an Environmental Impact Assessment of a Gas Pipeline from Prudhoe Bay, Alaska, to Alberta. (Winnipeg: Environmental Protection Board, 1971); Environment Protection Board. Environmental Impact Assessment of the Portion of the Mackenzie Gas Pipeline from Alaska to Alberta (Winnipeg: Environmental Protection Board, 1974.) 4 vols.; Environment Protection Board, Workshop on the Philosophy of Environmental Impact Assessments in Canada, (Winnipeg : Environment Protection Board, 1973).

[55] Page, Northern Development, 151.

Carleton University in Ottawa. The conference was attended by approximately one hundred and fifty delegates including Frank Banfield, Max Britton, Douglas Clarke, Donald Chant, Peter Cumming, Max Dunbar, Moira Dunbar, William Fuller, Eric Gourdeau, Ken Hare, John Livingston, Trevor Lloyd, A.H. Macpherson, Winston Mair, Dalton Muir, John Naysmith, Dick Passmore, Carson Templeton John Theberge, Andrew Thompson, and Ronald Veale.

All of the major groups that were interested in the North had representatives at the conference and contributed to its resources. Scientists from the Canadian Wildlife Service gave what they were legally able to, the Environment Protection Board made available all its research and reports, Frank Banfield of the Northwest Project Study Group provided information on that organization's work. Pollution Probe and the Canadian Nature Federation both presented statements outlining their policies on the issues. In addition to Curley and Wah-Shee there were many other Natives present, some representing organized groups others representing particular communities.

The Arctic Alternatives conference was intended to create a definitive body of knowledge on the negative effects of northern development. It was loosely modeled on the Resources for Tomorrow Conference with prominent scientists contributing discussion papers which were then debated in workshops. Unlike Resources for Tomorrow, it also included significant sections on the role of the Native people and the legal aspects of northern development.

Discussion papers on wildlife and the environment were contributed by Douglas Clarke, Max Dunbar, Ken Hare, John Sprague, John Lambert, and John Theberge. The authors took into account the vast amount of research that had been done on wildlife throughout the 1960s particularly focusing on that research which was aimed at discovering the effects of industrial society on the environment. The discussion papers on Native people were prepared by Eric Gourdeau and Peter Cumming. The paper on legal aspects was prepared by Andrew Thompson, Alistair Lucas, and Robert Franson.

The working group on wildlife resources took a markedly different approach in its recommendations than similar groups from other conferences. For years scientists had been complaining that development should not precede until there was a thorough understanding of the northern environment and this was still the case. In the CARC report, however, the scientists argued that they already knew more about the northern environment than was being applied to development projects. The real problem was in making sure that that knowledge reached the public and the decision-makers and then in ensuring that the knowledge was applied.[56]

The working group on the aquatic environment warned of the damage that could be caused to streams, and hence to the fish in them, by construction of the pipeline and the accompanying highways. Major concerns were that poor culvert construction could affect spawning and migration of fish and that removal of gravel from riverbeds for construction purposes would cause siltation of the rivers. With regards to oil spills the scientists talked about them not as a potential problem but as an inevitable result of oil exploration and extraction.[57]

In Pollution Probe's brief to the conference Chant again stated environmentalist demand that "a freeze be placed on all new Arctic oil and gas extraction and development".[58] The Probe statement was strongly influenced by Usher's Bankslanders,

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[56] Working Group Report, "Wildlife Resources North of '60," in Arctic Alternatives, 247.

[57] Working Group Report, "Aquatic Resources in the Canadian North," in Arctic Alternatives, 190.

[58] Pollution Probe, "The Challenge of the Arctic: A Review of Arctic Issues. Brief Submitted to the National Workshop by Pollution Probe," in Arctic Alternatives, 52.

Woodford's Violated Vision, and Passmore's Crisis in the North. Pollution Probe endorsed the proposition that northern development must not interfere with Native people's option to live off the land.

Douglas Clarke, who had recently retired as the Chief of the Fish and Wildlife Branch of the Ontario Department of Lands and Forests, (Max Dunbar called him "the most experienced worker on northern wildlife in the country"[59]) praised the efforts of Arctic Gas in providing funds for biological work but commented that the "the whole thing reminds me of covering ones' supplies with a big tarpaulin in an Arctic wind. A couple of corners are being held down valiantly, but the cover seems still to be loose and flapping."[60]

As noted above the CARC went to great lengths to align themselves with the Native people of the North. In addition to Curley and Wah-Shee the conference was attended by a group of Inuit and Dene including Bob Charley, Nellie Cournoyea of the Committee for Original People's Entitlement, Willie Joe of the Yukon Native Brotherhood, Zebedee Nungak of the Inuit Association of Northern Quebec, and Joe Jacquot of the Yukon Association of Non-Status Indians.

There was a great effort on the part of many scientists to include the Natives and to utilize their knowledge of the natural environment. It was conventional wisdom in the early 70s that the best way to learn about the destruction of the environment was to ask the Natives whom, the thinking went, had a deep connection to the land. A somewhat more cynical motivation for including them in the conference may have been that, since the founding of the Native organizations, Native rights had become a politically important issue. It was recognized that this could be exploited by the environmentalists to the benefit of both parties. One of the conclusions of the Wildlife Workshop, for example, was "Native peoples are needed both for gathering the necessary information and bringing it to the attention of other Canadians."[61]

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[59] M.J. Dunbar, "Discussion Paper on Renewable Resources," in Science and the North, 88.

[60] C.H.D. Clarke, "Terrestrial Wildlife and Northern Development," in Arctic Alternatives, 231.

Relations between the scientists and the Natives were not without their problems, however, as was pointed out to one particularly wordy scientist by Zebedee Nungak who complained the conference was full of

> well-meaning persons who offer suggestions and have some ideas, but between this group of scientists, anthropologists and us, the people who live in the North, there is a gap, and I don't know how that could be solved. ...We don't understand each other. That may be a very good idea that you had, but I couldn't grasp it at all.[62]

Whatever the motivation behind it there was a concerted effort to link the issues of protecting the land with protecting the culture of the Inuit and the Dene. Eric Gourdeau reported that while the government had been making efforts to encourage the Native people to "discover their origins and to rediscover their identity...their history and their language" these efforts were largely in vain if, though the process of industrial development "the last element of their national identity, the one that they though they had kept intact, is being denied them - the land."[63]

Peter Cumming argued that the Natives "[who] have lived as successful environmentalists and conservationists for a very long time" were never consulted on northern development schemes or on land use regulations, he specifically cited the lack of consultation with regard to the Mackenzie Valley Pipeline. Cumming decried the government policy, still in force in 1972, that industrial development would benefit the

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[61] "Wildlife Resources North of '60," in Arctic Alternatives, 247.

[62] See comment by Zebedee Nungak in "Impressions of the Land," in Arctic Alternatives, 157.

[63] Eric Gourdeau, "The People of the Canadian North," in Arctic Alternatives, 72.

Natives as being insensitive to the desire of Natives to maintain their traditional life.[64]

At the end of the symposium on Native rights the Native delegates to the conference made a number of requests of the CARC. The Natives asked CARC to take several actions; to provide resource people to assist Native groups in dealing with the issues of northern development, to press for public hearings at the local level across the Canadian North, to permit the northern Native people to express their ideas and views on any kind of important development, and to insist that permits for exploration or development be conditional on the approval of communities affected.[65]

The founding members of CARC had been impressed with how American environmental groups had used the court system to fight the TAPS proposal. More impressive to them, however, was the American judicial system which allowed such legal challenges to occur. The United States National Environmental Policy Act, passed in 1970, provided for the role of the individual citizen in protecting the environment. Yet when the time came to deal with northern development schemes in Canada the members of CARC discovered "with distressing rapidity" that Canadian citizens who wished to challenge the government over land use policy had "little recourse to legislative procedures other than elections, no recourse to the courts and little recourse to tradition."[66] With their impressive legal team of Cohen, Cumming, Fraser, and Thompson, the CARC began to work on the problems of using the law to aid their cause. After working on it for some time the legal team discovered that, although there was no way to directly challenge a specific development, the law did provide "a wide variety of avenues for what we loosely describe as participatory democracy."[67]

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[64] Peter Cumming, "Our Land - Our People: Native Rights North of 60," in Arctic Alternatives, 99-102.

[65] Working Group Report, "Recommendations of the Northern Native Delegates, Socio-Cultural Group," in Arctic Alternatives, 130.

[66] Kitson Vincent, "Two Elephants and the Mouse," Nature Canada 1, no. 3 (July-September 1972): 38. The title of Vincent's article refers to a comment made by an oil company executive to members of CARC, "When two elephants are involved there is no room for a mouse." CARC embraced the role of the mouse.

The main legal goal of the CARC was to institutionalize the citizen's access to the policy making process. They felt that those who had "a feeling for the intangible and non-monetary resource values of public lands north of '60 are at an extreme disadvantage" when dealing with the issues of northern development. Traditionally decisions about about largescale engineering projects were made on the basis of economic and engineering issues, there was simply no mechanism for those concerned about protecting the land to make a contribution.[68] CARC advocated that public hearings be held at every stage of the decision making process, from the development of an acceptable set of land use regulations to the final approval of a specific project. The basis on which CARC made these demands was their belief that Canadians were no longer simply content to vote every four years and allow the government to do what it would. As society became more complex it was increasingly impossible for elected officials to represent their constituents in all matters. [69]

The legal group also made several recommendations; hearings should be held to revise the guidelines for oil and gas pipelines, financial assistance should be provided to environmental and Native organizations to help with their transportation and legal fees, and the government should pass legislation granting the right to every Canadian citizen to bring action in Federal Court in respect to matters of environmental protection.[70]

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[67] See comments by Maxwell Cohen in "Citizens and the Law North of '60: A Symposium on Legal Problems in the North," in Arctic Alternatives, 363.

[68] Vincent, "Two Elephants and the Mouse,", 39.

[69] Robert D. Franson, Alistair R. Lucas, and Andrew Thompson, "Legal Problems in the Canadian North," in Arctic Alternatives, 336.

[70] Working Group Report, "Legal Aspects of Resources and Environmental Protection," in Arctic Alternatives, 357-360.

The formation of the Canadian Arctic Resources Committee and the Arctic Alternatives conference was a watershed event in the history of Canadian environmentalism. The most significant result of the group was the establishment of a powerful coalition of interests. The decision by the founding members of CARC to invite the newly formed Native rights groups to join the Committee and to participate in the conference was one which would have far reaching effects. The role of Native groups, and especially of individual Natives, would play a crucial role in Berger's decision at the Mackenzie Valley Pipeline Inquiry. Also important was the decision to develop a legal strategy for dealing with northern development. Although the Inquiry is best remembered for its informality, a large part of it was spent with the counsels for the various groups arguing legal points before Justice Berger. The Arctic Alternatives conference saw the fullest development of the idea that the well being of northern Natives was directly related to the protection of the land. The idea that the Natives should have the right to choose how they want to live, and that that right is infringed upon by the despoliation of the land, is a concept that would come to dominate relations between the federal government and Native groups.

The CARC's insistence that citizen's groups should have the right to participate in decisions about public land use policy was another dominant theme to emerge from the conference. After Arctic Alternatives it would have been almost impossible for the Trudeau government not to hold hearings of some kind on the Mackenzie Valley Pipeline.

The pressure for public hearings was greatly increased in late 1972 by the Committee for an Independent Canada. At the Committee for an Independent Canada policy conference held in in Edmonton in September 1972 it was the issue of northern development which created the most interest. The delegates overwhelmingly passed several resolutions on northern development including the recommendation that a moratorium be placed on all northern development until land claims had been settled and environmental research was complete. The discussion paper prepared for the conference, written by Robert Page and Ron Veale, was based almost entirely on Usher's Bankslanders and Woodford's Violated Vision. Veale and Page were highly critical of the Land Use Regulations and the speed with which the government was proceeding on plans for a Mackenzie Valley Pipeline. The CIC went on to recommend that "hearings be held to consider all aspects of the pipeline proposals at an early stage." To be effective, argued Veale and Page, these hearings must "involve the public and all interested parties to demonstrate that the undertaking has been given a complete evaluation."[71] The Committee agreed that northern development should benefit northerners and Native people and that Native land claims had to be settled. The CIC's position on Native people was derived from Peter Cumming's CARC conference paper on Native Rights and Franson, Lucas, and Thompson's paper on legal issues.

The CIC established a task force to research the pipeline, to make the public aware of the issues, and to intervene in the hearings. Between 1972 and 1977 the CIC played an important role in the debate over the pipeline.[72] They brought nationalist concerns to the Berger inquiry preliminary hearings but then dropped out and were much more actively involved the National Energy Board hearings. With the Canadian Wildlife Federation and other interest groups they formed the Public Interest Coalition (PIC) to fight at the National

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[71] Ron Veale and Robert Page, Northern Development: The Plunder of a Fragile Land. (Toronto: Committee for an Independent Canada, 1972), 9.

[72] Page, Northern Development, 55.; See also the edited proceedings of the 1972 CIC conference, A. Rotstein and G. Lax (eds.), Getting It Back (Toronto: Committee for an Independent Canada, 1974); For a nationalist critique of the project see John Warnock, "The Mackenzie Valley Pipeline: A $5 Billion Disaster," Canadian Dimension 9, no. 1 (October 1972): 35-40.

Energy Board hearings.

Shortly after the Arctic Alternatives conference the federal government sponsored a seminar to assist in the development of scientific guidelines and priorities for Northern Canada. Delegates to the conference included representatives from universities, industry, and government. A large number of the northern environmentalists were present including Banfield, Bliss, Cumming, Dansereau, Dunbar, Gourdeau, Hare, Legget, Mair, McTaggart-Cowan, Pimlott, Rea, Solandt, and Wilson. Discussion papers were contributed by Ken Hare on the Natural Environment, Max Dunbar and Ian McTaggart-Cowan on Renewable Resources, Robert Legget on Technology, Tuzo Wilson on International Research, and Omond Solandt was chosen as the Chair.[73]

Ken Hare asked for new directions and co-operation amongst all scientists. Commenting on the activities of the previous decade, Hare noted "scientific and intellectual developments have brought many scientists to the viewpoint of the ecologist."[74] Hare went on to explain that eight mammal and three bird species in the arctic were considered to be endangered and a further eight mammals and thirteen bird species were a cause of concern.

> The list of tundra animals is not long, so that such figures cause alarm, and the wildlife ecologists are angry men...There is no group of scientists whose work deserves more praise that the handful of men whose names dominate every review of these subjects - Banfield, Clarke, Cowan, Fuller, Kelsall, Pruitt.[75]

Max Dunbar and Ian McTaggart-Cowan used their paper to restate all of the major points that had been made at the Arctic Alternatives conference. They quoted large chunks of Arctic Alternative papers and constantly made reference to other papers. They expressed their displeasure that although CARC had suggested that the two conferences be combined the government had rejected that proposal. [76]

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[73] Science and the North: A Seminar on Guidelines for Scientific Activities in Northern Canada. 15-18 October 1972. Mont Gabriel Quebec (Ottawa: Queen's Printer, 1972).

[74] F.K. Hare, Science and the North, 73.

[75] Ibid., 71.

In 1973 environmental scientists were invited to address the National Northern Development Conference for the first time. Omond Solandt and Donald Chant both presented papers on the importance of protecting the environment. Tagak Curley sent a telegram, which was published in the proceedings, deploring the fact that the Inuit Tapirisat were not invited to the conference; he was invited to the 1976 conference.

It is clear that by 1973 CARC had made itself a powerful voice in the debate over northern development issues. The adoption by the Committee for an Independent Canada of CARC policies demonstrates that the issue of environmental protection had moved out of the realm of scientist's conventions and the 'radical fringe' and was now clearly an issue that a wide section of the population was concerned with. The invitation by the federal government to three members of CARC to prepare the background papers on wildlife and natural resources for the Mont Gabriel conference shows that at least some in government accepted the CARC as a legitimate body to assist in the development of guidelines. The presence of Solandt and Chant at the 1973 National Northern Development Conference indicates that industry, while hardly accepting the responsibilities urged on them by CARC, at least recognized that they would have to take the demands of environmentalists into consideration in any development plans. Important as these accomplishments were, however, they did not allow CARC to make the major contribution to the development of northern land use policy that they wanted to. It was not until 1974 with the appointment of a Royal Commission to look into the environmental and social impact of the proposed Mackenzie Valley Pipeline that this opportunity would present itself.

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[76] Arctic Alternatives, 13.

The various maneuvering by government and industry that led up to the Mackenzie Valley Pipeline Inquiry is a long and complex story which lies outside the scope of this discussion. It has been discussed in great detail by Robert Page and Edgar Dosman.[77]

On March 21, 1974 the federal government appointed Justice Thomas Berger as commissioner to inquire into the terms and conditions that should be imposed in respect to the granting of a right-of-way across Crown lands for the purposes of building a northern pipeline. The Order-in-Council establishing the Inquiry stated that it was desirable that "any such right-of-way that might be granted be subject to such terms and conditions as are appropriate having regard to the regional social, environmental and economic impact of the construction, operation and abandonment of the proposed pipeline."[78] In order for Berger to carry out his task he was authorized to hold hearings wherever he desired, to bring before him any person who might have information of interest to the Inquiry, and to hire all those he deemed necessary to the successful conduct of the Inquiry.[79]

The appointment of Berger as Commissioner to inquire into the possibility of northern pipelines was a fortunate break for those who opposed the pipeline. A profoundly ethical individual, Berger was dedicated to the rights of the citizen to question the state and to influence government policy. He had, for a short time, been leader of the provincial New Democratic Party in British Columbia and had acted as counsel for the Nishga Indians before the Supreme Court in 1973. Robert Page argues that the Trudeau government chose

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[77] See Page, Northern Development; Dosman, The National Interest; For the point of view of the pipeline applicants and a critical appraisal of the Berger Inquiry see Don Peacock, People, Peregrines, and Arctic Pipelines: The Critical Battle to Build Canada's Northern Gas Pipelines (Vancouver: J. J. Douglas Ltd., 1977) and Earle Grey, Super Pipe: The Arctic Pipeline, World's Greatest Fiasco? (Toronto: Griffin House, 1979).

[78] A copy of the Order-in-Council creating the Inquiry is printed in Berger, Northern Frontier, Northern Homeland, 1: 205-209.

[79] Berger, Northern Frontier, Northern Homeland, 1: 206

Berger because it believed he would have great credibility with the Native peoples and that they would be willing to accept his decision that the pipeline be authorized. Berger's appointment may also have been designed to win votes with the NDP, which was crucial for the minority Liberal government.[80]

CARC was delighted with the choice of Berger, especially when he let it be known that he planned to interpret his terms of reference so as to include a full hearing of the issue of Native land claims and that he accepted as legitimate the claims of CARC, the EPB, and the Native groups that they should be granted full participation in the Inquiry and that they should receive government funding to do so. CARC must also have been happy with the choice of two of Berger's key staff members. Professor Michael Jackson of the UBC Law school was appointed special counsel to the Inquiry as well as its chief of staff. CARC's counsels, Franson, Lucas, and Thompson, also taught at UBC Law school. John Fyles of the Geological Survey of Canada was in charge of the Pipeline Application Assessment Group, a group of government scientists appointed to review the scientific material presented by Arctic Gas in support of its proposal. Fyles had worked on committees with members of CARC and the EPB at Mont Gabriel and had attended the Arctic Alternatives conference in 1972. At the very least CARC benefitted from knowing the two men quite well; it is more likely, given some of the actions of Jackson and Fyles at the Inquiry, they had ideological allies within the Inquiry.

One of the many unique aspects of the Berger Inquiry is the very fact of its existence. It was the first time that the Canadian government had held hearings to investigate the social and environmental effects of a major construction project. Previous pipeline applications, for example, had been handled solely by the National Energy Board

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[80] Page, Northern Development, 90.

(NEB) which considered only the economic and engineering aspects of a proposed project. The Trudeau government's decision to hold extensive hearings into the environmental and social aspects of the pipeline was strongly influenced by the pressure which was applied by the CARC, Pollution Probe, Native groups, and the Committee for an Independent Canada.

By the time the Inquiry began the connections between CARC, the Environment Protection Board, the Committee for an Independent Canada, and the various Native organizations were closer than ever. The various groups had decided that they could deal more effectively with the Arctic Gas application if they pooled their resources. To this end the CARC, the Federation of Ontario Naturalists, the Canadian Nature Federation, Pollution Probe, and the Canadian Environmental Law Association agreed to form a single organized group, called the Northern Assessment Group, which was represented at the Inquiry by CARC.[81] The EPB and the Native organizations, while co-operating with the Northern Assessment Group, were not a part of it and participated in the Inquiry as an autonomous organizations. Further drawing the groups together were their legal and scientific advisers. Peter Cumming was legal counsel for the Committee for Original People's Entitlement and the Inuit Tapirisat while Pimlott and Usher were their science advisers. The CIC's Mel Watkins was adviser to the NWT Brotherhood, while Ron Veale was counsel for the Council of Yukon Indians.

The Inquiry itself lasted from April 1974 until November 1976. During that time Berger held three sets of hearings - preliminary, formal, and community. The preliminary and formal hearings were held in Yellowknife while the community hearings were held in all of the communities throughout the Mackenzie Valley and the western Arctic (thirty five in total) and ten southern Canadian cities from Halifax to Vancouver. By the end of the Inquiry Berger had heard testimony from over three hundred northern experts and over one thousand northern inhabitants. The total cost of the Inquiry reached over $5.3 million dollars.[82]

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[81] Page, Northern Development, 98.

The preliminary hearings were held to establish the manner in which the rest of the Inquiry should proceed and to establish the rules governing the production of evidence. It was at the preliminary hearings that Native groups, the EPB, and CARC made their case for 'intervenor status' and requested funds for research. Berger recommended that the government provide funding to the Native groups, the Northern Assessment Group, the EPB, the NWT Association of Municipalities, and the NWT Chamber of Commerce. Concerning the funding of the Northern Assessment Group Berger commented that the funds allowed the group "to carry out their own research and hire staff, and to ensure that they could participate in the Inquiry as advocates on behalf of the environment. In this way the environmental interest was made a part of the whole hearing process." At CARC's request Berger granted the public interest groups close to a year to review the Arctic Gas application before the formal hearings began. [83]

From the outset of the Inquiry process Berger made clear his willingness to hear evidence that related to the pipeline application in the broadest possible sense. "They say I am to conduct a social, economic, and environmental impact study. It is a study whose magnitude is without precedent in the history of our country. I take no narrow view of my terms of reference."[84] Over the vocal protests of Arctic Gas Berger decided that his terms of reference allowed him to hear the claims of the Native groups that no pipeline be built until their land claims were settled. Further, Berger believed that it was crucial for him to consider not only the effect of the proposed Arctic Gas pipeline but also the impact that would result from the probable creation of a 'transportation corridor', which might eventually include not only a gas pipeline but also an oil pipeline, service roads, pumping stations, generator plants, and a host of other industrial operations. Further, Berger agreed with CARC that he was bound to examine the impact of the smaller 'feeder lines' that would have to be built throughout the Mackenzie Delta to supply the Arctic Gas pipeline with gas. Crucial to Berger's analysis was the impact of the actual construction process, the building of roads, airstrips, warehouses, housing for over seven thousand construction workers, and immense gravel operations.[85] CARC played a major role in arguing before Berger what the Inquiry should examine and the manner in which the formal hearings should be conducted.

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[82] See Appendix 1 "The Inquiry Process," in Berger, Northern Frontier, Northern Homeland, I: 223-230 and Page, "Observations of an Academic Participant," for two accounts of the workings of the Inquiry.

[83] Berger, Northern Frontier, Northern Homeland, I: 226.

[84] Berger, Appendix 2, Inquiry Documents, "Preliminary Rulings (1)," in Ibid., II: 244.

The formal hearings were held in Yellowknife and were conducted in much the same way as a courtroom trial. Testimony was heard from the pipeline applicants (both Arctic Gas and Foothills had submitted applications to build a pipeline) and their consultants, the Northern Assessment Group scientists, the Environment Protection Board, the Native groups, and other interested parties. Each group had the right to cross examine the testimony of the other groups and to call expert witnesses. Berger's decision to grant the environmentalists intervenor status, and to provide them with funding, meant that in a very real way they could act as the 'prosecution', while the oil companies were the 'defendant'.

The community hearings were much more relaxed than the formal hearings. They were held in halls, schoolrooms, and in the open air. There was no cross-examination, and the rules of admissibility of evidence were greatly relaxed. Any member of the community who wished to address the Inquiry was allowed to, and sometimes every member of a community chose to address Berger. A great amount of the Native testimony dealt with the issues of land claims, the desire for self-determination, and the cultural impact a massive construction project would have on Native life. Many Natives also talked about the effect that oil exploration was having on the land or about natural phenomena that they believed might harm a pipeline.[86]

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[85] Ibid., I: ix.

On the subject of the northern environment Berger heard "hundreds of hours of evidence from experts and laymen alike"[87] This testimony included evidence not only from CARC and EPB scientists, but also from government scientists, scientist consultants hired by Arctic Gas and Foothills, independent experts called by the Inquiry staff to resolve issues disputed by the different groups, and from the Native people.

EPB members had a detailed knowledge of the pipeline project from being in the employ of Arctic Gas. Their four-volume report was entered as evidence and was referred to constantly during the Inquiry. Berger noted that the EPB report, which was financed by Arctic Gas, and which was "in many respects critical of the Arctic Gas proposal" was of "great assistance to the Inquiry".[88] That the EPB report was damaging to the applicants there can be little doubt; at the NEB hearings Arctic Gas constantly challenged its use by the CIC.[89]

Despite the fact that the Inquiry was intended as a way for the Canadian government to determine the effect of a pipeline on the northern environment, the participation of government scientists, many of whom were the top experts in their fields, in the Inquiry was not a foregone conclusion. In their opening statement to the Inquiry CARC accused the government of withholding ecological reports in its possession and of ordering government scientists not to participate in the Inquiry. With CARC threatening to subpoena the government scientists, or to ask for adjournment of the proceedings, the Inquiry staff applied pressure on the Department of the Environment to make the government scientists and their research available. When the government reluctantly agreed to allow its scientists to testify, it warned that their testimony and their research was "available to the Inquiry only, and for no other purpose."[90]

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[86] Ibid., I: 227.

[87] Ibid., I: 4.

[88] Ibid., II: 224.

[89] Page, Northern Development, 151.

Once government scientists and their work were available to the Inquiry, the CARC was able to make effective use of their research in demonstrating the fragility of the Arctic environment and its susceptibility to damage from oil and gas development. Because of the legal nature of the Inquiry the government scientists were free to divulge the findings they had made while working on government research projects. Their research proved almost an embarrassment of riches for the CARC; it became plainly evident at the Inquiry that the government had plenty of information suggesting that the industrial development of the North would be harmful to the environment.

Numerous scientists from at least three government departments were called to testify about the effect an oil spill could have on the northern environment. Some particularly damning testimony came from David Sergeant, a marine biologist with the Department of the Environment, who testified that oil and gas activities in the Delta could cause the extinction of the white whale. Berger was particularly impressed by Sergeant, noting that his testimony was not challenged by Arctic Gas, Foothills, Imperial, Shell, or

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[90] Ibid., 105-108.

Gulf, "all of whom were represented by counsel when the evidence was heard."[91] Other government scientists testified about the impact development would have on various birds, mammals, and fish.

Arctic Gas itself presented a number of well respected wildlife scientists which it had hired as consultants after the split with the EPB. These included Frank Banfield and William Gunn, two scientists well known and respected not only for their research but for their strong views on environmental protection. The consultants were clearly in a somewhat uncomfortable position, they were testifying for an organization that many of their colleagues were doing everything in their power to stop. The consultants did not disagree with CARC's or the EPB's assertions about the danger presented to the North by development. The environmentalists were often able to use the consultant's testimony against Arctic Gas. Indeed, there is some reason to suspect that it may have been the testimony of Banfield and Gunn which prompted Berger to make one of his most controversial recommendations, that no development at all should occur in the northern Yukon.

Arctic Gas planned to build a pipeline across the northern Yukon from Prudhoe Bay, Alaska to the Mackenzie Delta where it would join up with the proposed Mackenzie Valley Pipeline. This section of the pipe was crucial to the project as Prudhoe Bay was the site of much of the gas. There were two possible routes for the pipeline; along the coast or through the interior. Arctic Gas asked its consultants to conduct extensive research on both routes and report about the environmental impact each route might have. In testimony to the Inquiry Frank Banfield, the most respected authority on caribou in Canada, testified that he could not endorse the interior route because it would be harmful to the Porcupine Caribou herd; for that reason he recommended the coastal route.[92] Ornithologist William Gunn, on the other hand, testified that the coastal route would have a devastating impact on the birds, especially the snow geese, of the coastal area; he recommended the interior route.[93] Given such a choice Berger decided that it would be best if no pipeline be built across the northern Yukon.

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[91] Berger, Northern Frontier, Northern Homeland, 66.

Scientists for Foothills also presented evidence which weakened their employer's position, and strengthened the arguments of CARC. Ornithologists George Finney and Virginia Lang, in a report written for Foothills and quoted by Berger, concluded that the peregrine falcon was particularly endangered by development and that "developers have to face the fact that the destruction of a single nest site or interference with nesting in a single year is a serious and unacceptable impact."[94]

The testimony of the Native people supported and amplified the scientists claims that the northern environment was being damaged. At the community hearings Berger heard evidence from numerous Inuit about what the land meant to them and how they thought the pipeline could damage it. In the northern Yukon Berger went to the tiny village of Old Crow where he heard testimony from everyone who lived there. The entire village testified that it did not want the pipeline because they had heard that it would be harmful to the animals on which they depended on for their livelihood and that it would destroy their way of life.[95]

There was virtually unanimous agreement between all parties at the Inquiry that if the oil was to get into the environment there would be damage. Even the pipeline applicants admitted that a major, uncontrolled oil spill would be an environmental disaster. Their claim was that they had the ability to prevent such a disaster from occurring, or to control and mitigate one if it was to occur. For this reason the environmentalists spent a great deal of time demonstrating that the pipeline could not be built safely and that, once built, it would be a constant danger. In this area the EPB was more effective than CARC because its membership contained engineers who were competent to analyze the engineering claims of Arctic Gas and Foothills.

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[92] Ibid., I: 39.

[93] Ibid., I: 44, and 62-63.

[94] Ibid., I: 79

[95] Ibid., I: 36-37.

One of the most heated engineering debates that took place was over the issue of frost heave and the danger of a pipeline fracturing. Arctic Gas, who had spent over a million dollars researching the problem testified that they fully understood the frost heave phenomenon and its effect on the pipeline and that they were fully confident they could control it.[96] Members of the EPB and the Commission's own counsel John Fyles did not share Arctic Gas's confidence. Fyles actively looked for witnesses competent to challenge the Arctic Gas claims. These witnesses were Ken Adam, an engineer with the Environment Protection Board, and Peter Williams of Carleton University. Williams and Adam disagreed with the Arctic Gas scientists, arguing that they could not control frost heave. The debate raged for over a year with both sides disputing the other's research until finally Arctic Gas admitted that they had made serious errors in their testing and that they could not be sure they could control frost heave.[97] It was a major victory for the environmentalist scientists.

In his letter to Warren Allmand, Minister of Indian Affairs and Northern Development, announcing the completion of the Inquiry and his recommendations Berger wrote,

> The North is a frontier, but it is a homeland too, the

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[96] Ibid., I: 19.

[97] Ibid., I: 20.

> homeland of the Dene, Inuit and Metis, as it is also the home of the white people who live there. And it is a heritage, a unique environment that we are called upon to preserve for all Canadians.
>
> The decisions we have to make are not, therefore, simply about northern pipelines. They are decisions about the protection of the northern environment and the future of the northern peoples.[98]

With respect to the pipeline Berger made two important decisions. Firstly, he concluded that "it is feasible from an environmental point of view, to build a pipeline ... along the Mackenzie Valley."[99] He recommended, however, that the building of the Mackenzie Valley Pipeline be delayed for ten years until native land claims could be settled and an orderly northern development plan could be worked out. The decision for the delay was based on the evidence give by the Native groups and the Native people themselves. The second decision, however, was an environmental one. After considering the section of the pipeline that would run from Prudhoe Bay to the Mackenzie Delta Berger concluded, "There should be no pipeline across the Northern Yukon. It would entail irreparable environmental losses of national and international importance."[100] As Robert Page has observed this was one of the most important decisions in the entire report. "In one stroke of the pen Berger had severed the pipeline system from its Prudhoe Bay source of supply."[101]

In justifying his decision to recommend that no pipeline be built across the northern Yukon Berger wrote,

> We should recognize that in the North, land use regulations based on the concept of multiple use, will not always protect environmental values, and will never fully protect wilderness values. Withdrawal of land from any industrial use will be necessary in some instances to preserve

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[98] Ibid., I: vii.

[99] Ibid., I: xvi.

[100] Ibid., I: xxvi.

[101] Page, Northern Development, 188.

> wilderness, wildlife species, and critical habitat.[102]

Berger recommended that the northern Yukon should be turned into "a new kind of park - a wilderness park" one in which all industrial activity would be forbidden. In suggesting this radical new proposal Berger was echoing an idea that had been advanced by members of CARC and actively promoted by the Arctic International Wildlife Range Society, of which Andrew Thompson was president.[103] In justifying the need for land withdrawal Berger noted the influence on his thinking of a CARC policy paper on land management.[104]

The influence of the environmentalist scientists on Berger's decision is clear. In his final report Berger restated many of the central ideas that they had been advancing for the preceding fifteen years. He agreed that a major oil spill was 'inevitable' and that the oil companies did not have the ability to clean one up.[105] He believed that oil and gas development was not the solution to the problems of the northern Natives or to the northern economy. He agreed that there were 'critical gaps' in the body of northern science and emphasized the need for the government to work towards filling these gaps if it expected to develop the north.[106] He advocated the necessity of recognizing the "links between attitudes to environment and attitudes to native peoples" arguing that "an assault upon the environment was also an assault upon [the Native] way of life."[107]

Berger's decision was a tremendous victory for the environmentalist scientists. The intense media coverage of the Inquiry and the wide degree of public support for the decision ensured that the report, while never formally accepted, had the desired effect. Berger's report brought the ideas of the environmentalist to the entire Canadian public in a way that the scientists had never before been able to. After Berger it was impossible for government and industry to not take environmental impact into account for any project.

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[102] Ibid., I: xi-xii.

[103] 46-48; George W. Calef, "The Urgent Need for a Canadian Arctic Wildlife Range," Nature Canada 3, no. 3 (1974): 3-11.

[104] Berger, Northern Frontier, Northern Homeland, I: 31; Kenneth P. Beauchamp, North of '60: Land Management in the Canadian North. (Ottawa: CARC, 1976).

[105] Ibid., I: 72

[106] Ibid., I: xvii.

[107] Ibid., I: 29.

CONCLUSION

In the two decades between Diefenbaker's 'Northern Vision' and the publication of Berger's Northern Frontier, Northern Homeland the attitudes of a large segment of Canadian society towards northern development, the environment, and the Native people of the North changed significantly. By 1977 many Canadians no longer supported the ambitious development plans proposed by government and industry. The image of the North in the Canadian consciousness had changed considerably; the "great vault" waiting to be conquered had become "a heritage, a unique environment that we are called upon to preserve for all Canadians." This change was due in no small part to the efforts of the scientist environmentalists to convince the public and the government that the North was extremely vulnerable to damage from industrial development and that it should be spared the fate that poorly planned resource exploitation had brought to much of the rest of the world.

The full-fledged effort to protect the North that emerged in response to the Mackenzie Valley pipeline proposals was the result of over ten years of growing concern and organization amongst the northern scientific community. Somewhat ironically that community has its roots in an organization dedicated to developing the North, the Arctic Institute of North America. It was not until the Resources for Tomorrow conference in 1962, however, that the idea that scientists had a duty to actively work to preserve the northern environment crystallized. It was at that conference that the basic concepts of the northern protection movement, as well as many of its key personnel, emerged. The three important concepts to come out of Resources for Tomorrow were the necessity of gathering detailed knowledge about the northern environment, the need to keep the public informed about ecological issues, and establish an environmentalist group that would break up the straight line relationship between government and industry. Resources for Tomorrow was a turning point in the development of Canadian environmental thought and the ideas developed at it were given form throughout the sixties. Throughout the 1960s the northern scientific community worked to achieve the goals set out at the Resources for Tomorrow conference; by 1974 they had achieved most of them.

A wide array of ecological studies were carried out throughout the years under consideration. These studies provided scientists with a vast amount of detailed information about the northern environment. The research demonstrated to the scientists that their predictions about the fragility of the northern environment, and the simplicity of the ecosystem, had been correct. The scientific work done in the North during the 1960s and 1970s can be broken into two broad categories, basic ecological work and studies aimed at discovering the effect of development on the environment. Both kinds of research seemed to raise more questions than they answered.

The scientists efforts to disseminate scientific information to the public and involve them in northern issues were generally successful. Books by Max Dunbar, Jim Woodford, and Eric Gourdeau, aimed at bringing ecological knowledge to the non-specialist reader had proven popular. The effective use of the mass media in spreading the message of environmentalism had become quite sophisticated as was demonstrated by the Unbelievable Land radio talks and Fuller's Ideas programme on the Tundra conference. John Livingston's The Nature of Things television programme provided a regular forum for environmental ideas. Pollution Probe and CARC were very successful at using the media to draw attention to their activities. Organizations such as the Canadian Nature Federation and the Federation of Ontario Naturalists, often run by environmentalist scientists, kept their membership up to date on ecological issues through glossy magazines and regular newsletters.

The CARC was the very embodiment of the citizen's organization that had been proposed by Winston Mair at Resources for Tomorrow. It was competent to comment on and evaluate the potential environmental impact of proposed development projects. Its members had successfully brought together a diverse group of interests, Natives, lawyers, businesspeople, civil servants, with the intent of working to solve environmental problems. In forming CARC the scientist's drew on lessons they had learned from their involvement with other groups such as the Canadian Society of Zoologists, the Nature Conservancy, the Algonquin Wildlands League, and Pollution Probe.

Most importantly the northern scientists had managed to translate their concern and general public support into political pressure in order to force the creation of new mechanisms for ensuring that those who are responsible for protecting the environment take that responsibility. The scientific research provided them with the solid backing that was needed to go to government to present their arguments and to counter the claims of industry. The public's interest in the North and the environment, especially as demonstrated by the broad membership base of groups such as the Canadian Nature Federation, provided the popular support the scientists needed to get the government's attention.

In writing about the American experience Samuel Hays has argued that one of the differences between the modern environmentalist movement and the conservation of the early twentieth century is that the conservation impulse had been on the part of leaders in science and government whereas environmentalism was a more popular, grass roots movement.[1] This does not appear to have been the case in Canada where, in almost all cases, environmentalist groups have been founded by scientists. Nowhere is this more true than in the fight to protect the northern environment.

The impulse to protect the northern environment developed amongst the scientific community for a number of reasons. First, they were the only southern Canadians who had any real knowledge of the North, and therefore were the only ones who could see the danger development posed to the North. Although Canadians often define themselves by their northernness, very few have ever been north of Winnipeg. To many people in the 1960s and early 1970s the idea that an area as vast and as harsh as the North could be harmed by development seemed outrageous. While the citizens of Toronto could easily imagine the effect the Spadina expressway might have on their neighborhoods, it was very difficult for them to imagine the effect a pipeline would have on the Arctic. Amongst southern Canadians only scientists could understand the damage that development might have on the North. While it is true that many Native Canadians had noticed the effect oil exploration was having on the land and the animals, it is unlikely that their claims would have had much effect had there not existed a strong body of scientific evidence, and a well organized protest group, to support their observations.

The involvement of Native groups in the fight to protect the North, and the relationship between them and the environmentalists, is an issue that deserves a great deal more study. The participation the Committee for Original People's Entitlement, the Inuit Tapirisat, and the Dene Nation in the Berger Inquiry and was the first important political involvement of Northern Native protest groups.

Because the issue was the North, it provided a focus that bound scientists across the country together with a common cause. While some scientists had been involved in smaller, more local issues, such as fighting to stop logging in Algonquin Park or protesting the building of the Bennett Dam in British Columbia, the fight to protect the North was a national issue which provided a common focus for those scientists interested in protecting the environment be they in Toronto, Edmonton, or Vancouver.

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[1] Hays, Beauty, Health, and Permanence, 14.

The enormous interest in the resources of the North that occurred in the years after 1958 focused a tremendous amount of scientific attention on the region at one time. The postwar emphasis on planning, and the faith that science could make anything possible, ensured that scientists would be involved in determining the nature of the development process. Much new research was needed to provide the data on which planning could be based and the use of resources maximized. Coincidentaly this increased northern research began at a time when many Canadian biologists were beginning to pay attention to the relatively new field of ecology. In addition the scientific community in Canada was growing at an enormous rate, resulting in increased specialization and funding. The large amount of research being carried out, by an ever expanding northern research community, ensured that the damage being inflicted on the northern ecosystem was noticed.

A vague concern for the future of the North and some ecological studies documenting the damage being done to the environment would not by themselves have been enough to protect the North from industrial development. The government's own scientists had both the concern and the data, but their warnings often went unheeded. In order to have an impact on the course of northern development the scientist environmentalists had to form an effective and credible protest group capable of influencing government policy makers.

It is unlikely that a group of scientists would have banded together to fight development had other events of the period had not made such radicalism somewhat acceptable. The late 1960s were characterized by rapid growth of the academic community, a growing tolerance for left wing ideas and questioning of the status quo, rising anti-americanism, and resurgent nationalism. It was also a period in Canadian history marked great prosperity and a young, well-educated population. These factors combined to create a social order that was extremely amenable to those who questioned the wisdom of allowing an American dominated consortium of oil companies to destroy the Canadian North. These same factors which allowed the scientists to form an effective protest group also worked to ensure that the oil industry, with all of its financial and political power, was in no position to effectively fight off the environmentalist challenge.

Morris Zaslow has observed that the 'retarding force' of environmentalism reached the North at the same time as industry and that it hindered the development of the North and its incorporation into modern Canada.[2] This is doubly ironic when one considers that the fight to protect the North grew out of efforts to promote its development. Max Dunbar, Trevor Lloyd, Douglas Clarke, Ian McTaggart-Cowan, Donald Rawson and others were all early members of the Arctic Institute of North America, an organization devoted to pressuring the government to develop the North for the benefit of Canada.

One of the sad ironies of the scientists success in getting the public interested in the northern environment was the emergence in the late 1970s of a world wide anti-sealing movement. This movement, which focused exclusively on the 'rights' of the seal and the immorality of killing them, had very little relation to the protest against northern industrial development. Although concerns about the nature of sealing were raised by fisheries and wildlife scientists and mainstream conservation groups in the 1960s they were based on the need to protect the seal species from extinction and to ensure that relatively humane killing practices were used. By 1976, when protests had resulted in the successful imposition of a strictly enforced hunting season and strict licencing procedures, catch limits, and distinctions between native and non-native hunters, the scientists and groups such as the World Wildlife Fund and the Ontario Humane Society ceased the protest.[3] After 1976 the protest was based on emotional or philosophical opposition to the killing of seals by anyone for any purpose rather than any scientific concern about the viability of the seals or the environment. The highly successful protest had a devastating effect on the economy of the Inuit. The wide degree of general support that was given to the anti-sealing campaign by the general public may have resulted from the fifteen years of education that they had received from the environmentalist scientists. As was mentioned in the Introduction to this thesis, it is often very difficult to distinguish the various strands of environmentalism.

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[2] Zaslow, Northward Expansion, 270.

The scientist environmentalists were quite firmly rooted in the ecological view of preservation. Their rationale for protecting the northern environment rested on the argument that development would be harmful to the northern ecosystem and thus could possibly damage the hunting/trapping economy of the Inuit and Dene. Arguments that the North should be allowed to remain free of development for its own sake were occasionally advanced, but usually only in support of more scientific reasoning. The sealing protest, by contrast, was strictly an emotional one.

One issue that has not yet been addressed in this thesis is the question of the environmentalist scientists commitment to absolute scientific accuracy in their statements and impartiality in their research. Were they as objective as they claimed to be? While there is no doubt that groups such as the CARC and individuals like Peter Usher had a definite political goal, and for that reason alone we must doubt any claim to impartiality on their part, there is very little evidence to suggest that they were anything but scrupulous in their research and in the presentation of their findings. The fact that there was such widespread agreement about the danger posed to the Arctic by all scientists, whether they were affiliated with the government, industry, or the protest groups indicates that legitimacy of their concern and the accuracy of their statements. At no time in the Berger Inquiry did industry challenge the environmentalists on an ecological issue.

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[3] George Wenzel, Animal Rights, Human Rights: Ecology, Economy, and Ideology in the Canadian Arctic. (Toronto: University of Toronto Press, 1991): 47.

The increased involvement of Canadian scientists in actively working to protect the northern environment broke considerable taboos about the detachment and impartiality of the scientist. Prior to the 1960s Canadian scientists had often been content to remain in the background providing the raw data upon which others would make decisions. At that time science in Canada had primarily been concerned with the efficient conversion of natural resources into useful commodities and maximizing the yield of those resources. In the case of northern development, however, a large number of scientists felt that their work, and their warnings, were being ignored by an administration which cared only for the bottom line. As a result they took the extraordinary step of using the mass media to release their findings, and deliver their message, to the public.

The idea that a major construction project should be cancelled because it could harm the environment represents a significant shift in Canadian thought. From the time the first Europeans arrived in Canada the history of this country has been the history of the development and exploitation of natural resources. Fish, furs, lumber, minerals, wheat - all were exploited as the country was opened up. Their use was considered to be the birthright of Canadians, and their development was a sign of progress. The questioning of the need to develop the North, to bring it into the modern world, was a significant challenge to the idea of progress. The issues raised by the scientist environmentalists continue to effect Canadian life today. Environmental protection, the role of the North in Canada, and the rights of native people remain three of the most important aspects of current political life in Canada.

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